A MULTIFACTOR INDEX TECHNIQUE FOR STATE EDUCATION FUNDING

by

Carol E. Hanes

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TABLE OF CONTENTS

		Page
ACKNOWLEDGMENTS		iii
ABSTRACT		vi
CHAPTER		
I	INTRODUCTION	1
	Statement of Purpose	2
	Delimitation	2
	Assumptions	3
	Justification	4
	Method	5
	Definition of Terms	7
II	VARIABLES AFFECTING EDUCATIONAL PRODUCTIVITY	9
	Educational Expenditure Studies	9
	Studies of Educational Inputs and System Products	16
	Summary	28
III	SELECTION OF VARIABLES AND DEVELOPMENT OF FUNDING MODELS	31
	Selection of Variables	32
	Development of Factors	36
	Calculation of Factor Scores	41
	Development of Funding Models	45
IV	ANALYSIS OF THE FUNDING MODELS	51
	Description of Funding Models	51
	Increases and Decreases in Funding Among Districts	56
	Impact of the Eight Models on Five Criteria	60
	Characteristics of Individual Models	67
	Summary	84
V	SUMMARY	86
	Purpose of the Study	86
	Procedures	86
	Findings	87
	Conclusions	90
	Recommendations for Further Study	91

Page

APPENDIX 1 93

APPENDIX 2

Part A. 95
Part B. 98
Part C. 103

APPENDIX 3 114

APPENDIX 4

Part A. 116
Part B. 118
Part C. 120

APPENDIX 5

Part A. 122
Part B. 124
Part C. 126
Part D. 128
Part E. 130
Part F. 132
Part G. 134
Part H. 136

APPENDIX 6

Part A. 138
Part B. 140
Part C. 142
Part D. 144
Part E. 146
Part F. 148

APPENDIX 7 150

APPENDIX 8 154

APPENDIX 9 156

APPENDIX 10. 158

APPENDIX 11. 160

APPENDIX 12. 162

BIBLIOGRAPHY 163

BIOGRAPHICAL SKETCH. 167

Abstract of Dissertation Presented to the Graduate Council of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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By

Carol E. Hanes

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In view of sociological and technical developments since World War II, consideration must now be given to the design, field testing, and implementation of comprehensive state school support distribution mechanisms that recognize the wide variations in educational need existing among school districts. Measured in terms of socioeconomic, resource utilization, and programmatic characteristics, the requirements of school districts can be adequately supported through a state school support program that accommodates educational goals and priorities and capitalizes on recent advances in data analysis and data handling techniques.

The purpose of this study was to develop a state school support technique capable of recognizing the variety of socioeconomic characteristics, school resource utilization patterns, and programmatic responsibilities among the school districts in a state and capable of allocating funds to districts with certain characteristics according to established state goals.

Four phases of activity were involved in accomplishing this purpose. First, data elements were collected for Florida and grouped into socioeconomic, resource utilization, and programmatic subgroups.

Second, principal component analysis was used to reduce the large number of variables collected to a small set of factors that reflected the independent dimensions of the socioeconomic, resource utilization, and programmatic subgroups. Factor scores were calculated for these factors in the third phase. In the fourth phase, the factors were used in a regression equation to predict allocations based on actual 1972-73 per pupil expenditures in the sixty-seven county-based school districts of Florida.

The findings of this study may be divided into two groups, the findings of the analytical procedures and the results of the application of the funding models. A review of the analytical processes indicated the following results:

1. A sufficient number of variables for the accomplishment of the study were available from standard reporting procedures of the Florida Department of Education and the U.S. Bureau of the Census.
2. Independent factors in each subgroup could be identified that accounted for between 15 and 41 percent of the variance in the data set.
3. Funding models were designed that had different effects on districts with different characteristics.

In terms of specific results of the application of the eight funding models, the following major effects were observed:

1. Some models appeared to be more effective in predicting increases and decreases that fell largely in the $0 to $49 range; other models predicted primarily changes of $50 or more.

2. The changes in local district funding level per pupil predicted by the models ranged between plus and minus two hundred dollars.
3. The models tended to predict increased allocations for districts having an assessed valuation of property of less than $20,001 per pupil.
4. Although application of the models resulted in few increased allocations for districts whose per capita income equaled, or was greater than, $4,001, allocations for districts in this income category were not substantially reduced.
5. The urban impact of the models was very limited; however, models containing all of the socioeconomic factors and all of the programmatic factors tended to channel funds to urban areas.

This study suggested that a comprehensive funding technique incorporating a variety of socioeconomic, resource utilization, and programmatic variables can be developed. Furthermore, by predicting the level of funding off of the actual expenditures of a previous year, redistribution of funds might be achieved without destroying the financial base of the local school system.

CHAPTER I

INTRODUCTION

Currently used methods of allocating state funds for the operation of public schools were based on the work of school finance theorists in the early part of this century. The attempt during that period was to standardize at some level the minimum state educational program while permitting those districts able to and interested in providing additional services to do so. To this end many states adopted the Strayer-Haig foundation program approach which provides state equalization money to localities unable to offer the foundation program from local resources.[1]

Although American residential, social, technological, and industrial patterns have become much more complex than they were at the turn of the century, methods of allocating funds for public education have not greatly changed. The typical state funding program for education is a patchwork of foundation, categorical, and supplemental allocations. Some states have, for example, attempted to provide additional funds to districts, such as core urban areas, professing greater need arising from sociological conditions peculiar to those areas. Categorical funding programs evident in most states

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[1]See George D. Strayer and Robert M. Haig, *The Financing of Education in the State of New York*, Report of the Educational Finance Inquiry Commission, vol. 1 (New York: Macmillan Co., 1923); and Paul R. Mort, *State Support for Public Education* (Washington: American Council on Education, 1933).

reflect attempts to recognize needs for different types of services. One innovation in the foundation program approach, the cost differential program recently adopted by several states, including Florida, Kentucky, New Mexico, Rhode Island, and Utah, represents an effort to provide adequate funds for educational programs of different costs that occur with varying frequency among districts.

Growing demand for public services and the concomitant requirement for greater fiscal accountability dictate a search for a more systematic approach to providing funds for present and future educational programs. A great need exists for the development of comprehensive allocation techniques that are responsive to recognized state educational priorities.

Statement of Purpose

The purpose of this study was to develop a state school support allocation technique that could recognize a variety of socioeconomic characteristics, school resource utilization patterns, and programmatic responsibilities among the school districts in a state and allocate funds to districts having certain characteristics according to state goals and priorities.

Delimitation

The scope of the study was limited to consideration of data available for all of the sixty-seven county-based school districts of Florida for the 1973-74 fiscal year.[2]

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[2]Appendix 1 provides a listing of these districts and the identification number used for each in tabular presentations of data.

Assumptions

The following assumptions were made in the design and conduct of the study:

1. A formula-adjusted per pupil allocation for each local district within a state could be developed that recognized the factors associated with both the intra- and extra-system conditions that result in varying fiscal requirements for local districts.
2. Variations in requirements for fiscal resources existed among school districts in Florida during 1972-73.
3. Data reported to the Florida Department of Education accurately reflected actual practice, pupil achievement, and circumstances of operation during the 1972-73 school year.
4. The factors selected as indicators of need for fiscal resources were valid.
5. The 1973-74 count of full-time equivalent (FTE) students in the twenty-four programs funded in the Florida program closely approximated program enrollment in 1972-73. These programs were not funded separately in 1972-73.
6. Special education and vocational education programs were offered to all students requiring those educational opportunities, and the number of those students was accurately reflected in the FTE record for each of these programs.

Justification

All substantive theoretical work in public school finance can be traced to the contributions of Ellwood P. Cubberley and his colleagues between 1900 and the mid-1920s.[3] These early efforts were not based on sophisticated research techniques or large data bases, but rather were conceptualizations built on individual beliefs about how the public education system should operate. Research-based theory on which operational decisionmaking might have been grounded never became characteristic of the educational funding process. Instead, estimations of fiscal requirements tempered by legislative compromise became the standard operational mode for the support of public education.

The present methods of determining allocations are not adequate to meet the diverse fiscal and educational needs of an increasingly complex society, nor are they amenable to the satisfying of growing demands for fiscal and educational accountability. Many opportunities for developing data-based decision and allocation processes that were impossible in the earlier era are currently available. Educational planners equipped with computers and knowledge of the techniques of operations research and statistics can now view school finance as

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[3]See Ellwood P. Cubberley, *School Funds and Their Apportionment* (New York: Teachers College, Columbia University, 1905); Harlan Updegraff, *Rural School Surveys of New York State: Financial Support* (Ithaca, New York: by the author, 1922); Strayer and Haig, op. cit.; Henry C. Morrison, *School Revenue* (Chicago: University of Chicago Press, 1930); and Paul R. Mort, *The Measurement of Educational Need* (New York: Teachers College, Columbia University, 1924).

a system and thereby design more effective resource allocation methods.[4]

In contrast to traditional methods of allocating funds, such as weighted units or the negotiated budget, the use of a funding mechanism of the proposed type could foster the efficient operation of local school districts and provide funds to areas of high need, such as urban centers and districts with inadequate local taxing sources, but would not contribute to the perpetuation of unnecessary small and inefficient attendance centers. The use of such an approach could also reduce the opportunity for arbitrary bureaucratic decisions at the state level and encourage responsible local management with a minimum of state-imposed regulatory controls.

Method

The following steps were accomplished in the course of this study:

1. Variables reflecting socioeconomic and demographic characteristics, school resources, and programmatic responsibilities were selected.
2. Factors reflecting the independent dimensions of the socioeconomic, resource utilization, and programmatic subgroups were developed.

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[4]James E. Bruno, for example, discussed the application of the linear programming technique to determine the optimal state allocation scheme in "An Alternative to the Use of Simplistic Formulas for Determining State Resource Allocation in School Finance Programs," *American Educational Research Journal*, vol. 6, no. 4 (November 1969), pp. 479-514. J. Alan Thomas emphasized the need for utilization of data-based decision-making models in educational administration in Chapter Five, "Approaches to Decision Making," of *The Productive School* (New York: John Wiley & Sons, Inc., 1971), pp. 79-107.

3. These factors were used in the construction of alternative funding models meeting defined system priorities.
4. The developed models were applied to Florida data and their impact was analyzed.

The individual activities involved in completion of the study were grouped into four major activity blocks. Major procedural steps in each of the blocks are outlined below:

Activity Block 1 -- Data Gathering

Step 1 Available data items for each of the following subgroups were identified:

(1) socioeconomic and demographic factors,

(2) resource utilization factors, and

(3) programmatic factors.

Step 2 Desired data items were obtained and prepared for computer analysis.

Activity Block 2 -- Factor Development

Step 3 Variables within subgroups were correlated to identify those most closely related.

Step 4 Principal component analysis was used to isolate those factors in each subgroup capable of explaining the greatest variance in the data.

Activity Block 3 -- Development of Funding Models

Step 5 Factor scores were calculated for the identified factors in each subgroup.

Step 6 Eight models using the developed factor scores in various combinations were chosen for analysis.

Activity Block 4 -- Application and Analysis

Step 7 The funding models were translated into district allocations.

Step 8 The impact of the alternative models on selected school districts was analyzed.

Definition of Terms

Factor scores are standardized composite measures calculated from the loadings on variables found in principal component analysis that represent the theoretical dimensions associated with the particular factor.

Principal component analysis is a type of factor analysis through which the minimum number of independent dimensions needed to account for the greatest part of the variance in a set of intercorrelated variables can be determined.

Multiple regression analysis is a method for studying the effects and magnitudes of the effects of more than one independent variable on one dependent variable using principles of correlation and regression. The process attempts to explain a phenomenon by specifying relationships among variables.

Programmatic variables refer to measures of the existing educational opportunities offered students in a particular school district and student performance in those programs as measured by achievement on standardized and criterion referenced tests, dropout rates, and other measures. Appendix 2, Part C, provides a listing of the variables in this study which reflected the programmatic responsibility of the school district.

Resource utilization variables indicate the pattern of resource allocation in the purchase of services or physical items in each particular school district. Appendix 2, Part B, provides a listing of the resource utilization variables considered in this analysis.

Socioeconomic and demographic variables are measures of the relative possession of property or financial status by the population of a school district and the social characteristics of that population. A listing of those variables considered in this study is given in Appendix 2, Part A.

Transformations systematically alter data so that certain undesirable characteristics of the data set are changed while other characteristics remain unchanged. This operation is used to achieve normality of distribution, homogeneity of error variance, and additivity of effects.

CHAPTER II

VARIABLES AFFECTING EDUCATIONAL PRODUCTIVITY

In a research study of this type, attention must be given to the previous research efforts related to educational productivity and the factors associated with the differing levels of productivity. This review of completed studies provided background information facilitating identification of variables that have appeared significant in various studies, and also aided in the process of identifying research techniques appropriate for the study.

The literature documenting research on educational productivity has been divided into two large sections, the first dealing with studies of patterns of educational expenditures and the second with the estimation of predicted levels of productivity based on inputs to the educational system. Following a discussion of the philosophical basis on which each of these types of research was grounded, the research results are described to establish an adequate rationale for selecting the basic set of variables for use in this study.

Educational Expenditure Studies

During the first half of this century the general public, as well as educators, widely believed that increased expenditures for education provided educational opportunities of increased quality. Numerous studies of the cost-quality relationship made by key figures

in public school administration and finance during the 1930s and 1940s were designed to show the strength of the relationship between expenditure and the quality, or "character," of the program provided.[1]

The major tasks facing most communities during this period were those of providing a school term of adequate length, providing materials and libraries, and developing the administrative structure necessary to support the expanded function. Obviously, at this stage of development, providing an expanded program would cost more than a limited program; consequently, educational researchers were interested in enumerating for the public those opportunities made possible or enhanced by increased expenditures. Research studies focused on the determination of indicators of quality associated with different expenditure levels.

Largely patterned on work of Paul R. Mort and his colleagues, these early studies of the cost-quality relationship were directed toward generating greater public support for public education of higher quality. Underlying the early definitions of quality education was a strong concern for the welfare of the individual student. The encouragement of those characteristics in children which were judged to be good for the individual, and consequently for the nation, was treated as a major goal of public education. In his 1952 review

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[1]The cost-quality studies completed before 1950 are reviewed by Paul R. Mort, W. C. Reusser, and J. W. Polley, *Public School Finance*, Second Edition (1951), and by Paul R. Mort in *Problems and Issues in Public School Finance*, ed. R. L. Johns and E. L. Morphet (1952). Studies completed between 1950 and 1960 are reviewed in the Third Edition (1960) of *Public School Finance*. W. E. Barron reviewed later studies in *The Theory and Practice of School Finance*, ed. W. E. Gauerke and J. Childress (1967).

of this early research, Mort wrote that the approach intended to show "how schools differ at different expenditure levels in what they do with children and young people--activities presumed to affect their individual strength and happiness and through them the economic and social well-being of the American people."[2]

Table 1 lists some of the major cost-quality studies. The director of the research, the state for which the study was performed, the date of publication, and the instruments used to measure school quality are included.

The rating instruments used in the cost-quality studies are of great interest. Since the concern of educators at this time was that programs of greater scope be offered and that relatively new developments in educational and psychological theory and practice be implemented, a majority of studies evaluated school systems on the extent to which certain desirable practices were present.[3] According to Mort, the rating scales that evolved in the studies provided a

> basis for judgment of relative degrees to which a given school approaches each objective within the range of the known invention or know-how. These instruments have as reference points the present understanding of psychology of learning on one hand, and social and economic trends on the other.[4]

Most of the instruments were quite detailed, focusing on many of the observable characteristics of school programs. For example, the

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[2]Mort, *Problems and Issues in Public School Finance*, op. cit., p. 11.

[3]Of the twenty-six studies referenced by Mort and Reusser (1960), op. cit., p. 80, in their discussion of cost-quality studies, seventeen used this type of quality standard. Five used achievement tests and four used social and economic characteristics of the population.

[4]Mort, *Problems and Issues in Public School Finance*, op. cit., p. 14.

TABLE 1

MAJOR COST-QUALITY STUDIES

Research Director	Locale and Date	Rating Instrument
Paul R. Mort	New Jersey 1933	Adaptation of Mort and Hilleboe's "Rating Scale for Elementary School Organization" (1930)
Orrin E. Powell	New York 1933	Achievement Tests
Paul R. Mort	Maine 1934	Adaptation of Mort and Hilleboe's "Rating Scale for Elementary School Organization"
D. T. Ferrell	Kentucky 1936	Ferrell's "Efficiency Index"
A. G. Grace and G. A. Moe	New York 1938	Achievement test results and observation
Lester R. Grimm	Illinois 1938	Achievement test results and extensive check lists
Paul R. Mort	Rhode Island 1941	Mort and Francis G. Cornell's "Guide for Self-Appraisal of School Systems" (1937)
Paul R. Mort and Francis G. Cornell	Pennsylvania 1941	Mort and Cornell's "Guide for Self-Appraisal of School Systems"

TABLE 1 (Continued)

Research Director	Locale and Date	Rating Instrument
George D. Strayer	West Virginia 1945	Mort and Cornell's "Guide for Self-Appraisal of School Systems"
William S. Vincent	New York 1945	Adaptation of Mort, Arvid J. Burke, and Robert S. Fisk's "Guide for the Analysis and Description of Public School Services" (1942)
William P. McLure	Mississippi 1948	Adaptation of Mort and Cornell's "Guide for Self-Appraisal of School Systems"
Lorne H. Woollatt	New York and New Jersey 1949	Mort, William S. Vincent, and Clarence A. Newell's "The Growing Edge: An Instrument for Measuring the Adaptability of School Systems" (1946)

Mort-Cornell "Guide for Self-Appraisal of School Systems" contained 183 items, including many items of a subjective nature. Of special interest in the Mort-Cornell "Guide for Self-Appraisal of School Systems" is the presence of items representing "good," progressive educational practices introduced into the schools since the turn of the century. This checklist was used to measure the "adaptability" of schools. An exception to this pattern was the six-item "Efficiency Index" developed by Ferrell for use in Kentucky (1936), which included pupil-teacher ratio, length of school term, holding power, and teacher training and experience as the evaluative measures. A later checklist, "The Growing Edge," developed by Mort, Vincent, and Newell (1946), was designed to "reflect those characteristics of schools which there was reason to believe from earlier studies differentiated schools in the higher expenditure brackets as a group from average American schools."[5]

A study made in Pennsylvania by Mort and Cornell in 1941 included expenditure as one of the 183 items included in the "Guide for Self-Appraisal of School Systems" used in this survey to assess the degree of usage of innovative educational practices in schools throughout that state.[6] Expenditure data were for 1935 and ranged from twenty-five to one hundred dollars per weighted pupil. A correlation of .587 was reported between expenditure and the adoption of new practices.

In his study of Mississippi schools in 1948, McLure used an adaptation of Mort and Cornell's "Guide for Self-Appraisal of School

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[5]Ibid., p. 15.

[6]Paul R. Mort and Francis G. Cornell, *American Schools in Transition* (New York: Bureau of Publications, Teachers College, Columbia University, 1941).

Systems" to investigate educational practices in a sample of school districts.[7] The sample was divided into three average expenditure level groups: one hundred, eighty, and fifty dollars. Of the 156 items included in this checklist, 67 items showed a consistent relationship with expenditure. Thirty-five items were more highly related for the middle group than for the lower expenditure group, but no higher for the top group; 41 were consistently related in the top group only. These findings indicated that different levels of improvement could be expected for different levels of increased expenditure.

The study of New York and New Jersey suburban community schools made by Woollatt in 1949 was one of a series of studies initiated by the Metropolitan School Study Council.[8] An investigation was made of the relationship between expenditure level and quality as measured by the instrument "The Growing Edge." Data were for 1943-44, and expenditures ranged from $101 to $263 per weighted pupil. The correlation found between expenditure level and the composite score measured by the instrument was .59. A replication of the Woollatt study made in the mid-1950s established a relationship of .60.

The results of these and other similar studies have consistently strengthened the presumption that the relationship between cost and quality was strong. Mort drew the following conclusion:

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[7]This study is reported in William P. McLure, *Let Us Pay for the Kind of Education We Need: Report of a Study of State and Local Support of Mississippi's Schools* (University, Mississippi: Bureau of Educational Research, University of Mississippi, 1948).

[8]Lorne H. Woollatt, *The Cost-Quality Relationship on the Growing Edge* (New York: Bureau of Publications, Teachers College, Columbia University, 1949).

> That we can predict quality from expenditure to the extent indicated by a correlation somewhere between .47 and .59 indicates that we can account for 22 per cent to 35 per cent of the variations in quality from expenditure alone, anywhere on the expenditure scale. This is of extremely great significance. Within certain minima and maxima the quality of a field crop can be predicted probably to no greater degree from moisture alone. This would not lead us to the conclusion that moisture is of no consequence. It is but one factor, and a crucial one, in predicting the extent and nature of the crop.[9]

Studies of Educational Inputs and System Products

A second phase in the research linking fiscal resources and the results of expenditures for specific services, goods, or facilities began with the use of statistical analysis relating system inputs and outputs. First applied to industrial production following World War II, the use of input-output analysis is especially well-suited for production processes that are quantifiable at many levels. In education, however, neither the production processes nor the inputs are as susceptible to analysis as the production processes in an industry with a tangible product made up of component elements. The procedures, consequently, must be substantially modified before suitable application can be made to education.[10]

The production function model specifies a relationship between an output variable, or a measure of production, and a number of inputs into the production process. The educational production function is

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[9]Mort, *Problems and Issues in Public School Finance*, op. cit., p. 52.

[10]The application of systems analysis to educational institutions without adequate adaptation is a concern of proponents of the approach. See, for example, S. J. Knezevich, ed., *Administrative Technology & the School Executive*, p. 41, and J. Alan Thomas, op. cit., pp. 6-8.

a formula describing the educational process transforming selected resources allocated to an educational setting into the results of education. The most commonly used model is a linear regression equation in which the inputs may be either individual resources or composites of variables:

Production = f(Input A + Input B + . . . Input N).

Specification of a production model for education is difficult, for a generally accepted theory of the learning process that could be used as a basis in establishing the model is lacking. The theory of production function analysis assumes a known relationship among input resources; that is, the production process can usually be expressed in terms of amounts of a specific set of inputs. Not only are the critical factors of the learning experience largely unspecified, but also the nature of interactions between in-school variables and a number of socioeconomic factors is undetermined.[11]

A further difficulty lies in the definition of the educational product. Because of the limited data available on student achievement in many noncognitive areas, such as degree of socialization, acquired skills, employability, etc., information used in models has usually been limited to data readily available from the central

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[11]This aspect of production function modeling is widely treated in the literature. See Samuel Bowles, "Toward an Educational Production Function," *Education, Income, and Human Capital*, ed. W. Lee Hansen (New York: National Bureau of Economic Research and Columbia University Press, 1970); Thomas, op. cit., p. 17; Henry M. Levin, "The Effect of Different Levels of Expenditure on Educational Output," *Economic Factors Affecting the Financing of Education* (Gainesville, Florida: National Educational Finance Project, 1970), pp. 173-206; Harvey Averch et al., *How Effective Is Schooling?* (Santa Monica, Ca.: RAND Corporation, 1972), p. 32; and Jesse Burkhead, Thomas G. Fox, and John W. Holland, *Input and Output in Large-City High Schools* (Syracuse, N.Y.: Syracuse University Press, 1967), pp. 21-23.

office of the school district, such as achievement test scores. In spite of the limitations of the testing process, data are available; consequently, this information is almost universally used as an output measure.[12]

A much wider range of input variables has been used, including indicators of student time spent in school, teacher training and experience, quality of the school environment, and the socioeconomic background of students. Although the ideal model would explain 100 percent of the variation in production, the absence of a theory of learning makes this largely a matter of speculation.[13]

In the massive study reported in *Equality of Educational Opportunity*, James Coleman investigated the availability of equal educational opportunities for members of minority groups in the nation's public schools.[14] The purposes of the Equality of Educational Opportunity Survey (EEOS) were to (1) provide a description of resource inputs for six different racial and ethnic groups, (2) provide a description of school achievement of these groups at Grades 1, 3, 6, 9, and 12, and (3) provide the basis for analysis of the effects of various inputs on achievement.[15]

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[12]Burkhead et al., op. cit., provide a particularly lucid discussion of the alternatives available, pp. 24-26.

[13]Thomas, op. cit., p. 17. See also Elchanan Cohn, *The Economics of Education* (Lexington, Massachusetts: Lexington Books, 1972), pp. 243-44.

[14]James S. Coleman et al., *Equality of Educational Opportunity* (Washington, D.C.: U.S. Office of Education, 1966).

[15]James S. Coleman, "The Evaluation of Equality of Educational Opportunity" (Washington, D.C.: U.S. Office of Education, 1968), p. 10.

A major impact of the EEOS was to shift the focus of attention of policymakers toward the effectiveness of inputs into the system from the traditional focus on simple quantification of resources. The EEOS found in part (3) above that although the differences among schools were less important than socioeconomic factors in explaining differences in pupil achievement, variations in school were important in their impact on minority students. Achievement of minority pupils depended more on the school attended than did the achievement of the white students. Variation in availability of science labs showed a consistent though small relationship to achievement; the quality of teachers was found to be more strongly related to achievement. The verbal ability of teachers and the educational background of teachers and their parents were found most highly related. "Furthermore, it is progressively greater at higher grades, indicating a cumulative impact on the qualities of teachers in a school on the pupil's achievements."[16] Data also suggested that the educational background and aspirations of fellow students in a school were important in explaining variations in the achievement of minority students.

Burkhead, Fox, and Holland studied input-output relationships for Chicago and Altanta high schools.[17] In each instance output, or dependent, variables and input, or independent, variables were selected for correlation analysis preliminary to selection for use in the study. Stepwise multiple regression was then used to order the selected variables by importance of contribution, and an analysis of value added was made by predicting scores on the eleventh- and

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[16]Coleman et al., op. cit. (1966), p. 22 in Summary Report.

[17]Burkhead et al., op. cit.

tenth-grade tests on the basis of ninth- and eighth-grade I. Q. scores.

Three dependent variables were used in the Atlanta study:

1. Tenth-grade school medians for verbal achievement test scores.
2. Percent of male dropouts of male enrollment.
3. Percent of 1961 graduating class in school in 1961-62.

Median family income, current expenditure per pupil, building age, library expenditure per pupil, average faculty salary, enrollment-faculty ratio, teacher turnover, and size of high school were selected as independent variables. The Atlanta study found that, when the dependent variable was postsecondary educational intentions, faculty salary was the only significant variable. Using dropouts as the dependent variable, family income, current expenditure, expenditure for libraries, and school size were found to be significant. Family income and enrollment-faculty ratio were significant in predicting verbal achievement. The only variable significantly related to verbal score residuals was teacher turnover. About 85 percent of the variance in tenth-grade verbal scores was accounted for; the eight variables explained 91 percent of the school dropout rates. Only 46 percent of the variance in post high school education was explained.

In the Chicago study, eleventh-grade I.Q., eleventh-grade reading scores, number of dropouts, intentions for postsecondary education, eleventh-grade I.Q. residuals, and eleventh-grade reading residuals were used as dependent variables. Median family income, average daily membership, age of school building, textbook expenditure per

pupil, expenditure per pupil for materials and supplies, median teacher experience, median percent of teachers with M.A. or higher degree, teacher man-years per pupil, administrative man-years per pupil, and auxiliary man-years per pupil were used as independent variables. None of the independent variables proved statistically significant in predicting post high school education intentions. However, family income, building age, and expenditures per pupil for materials and supplies were significantly related to dropout rates. Family income was the only variable significantly related to I.Q. and eleventh-grade reading scores. Only teaching experience was related to the reading residuals. About 86 percent of the variance in the eleventh-grade I.Q. scores and 86 percent of the variance in the eleventh-grade reading scores was accounted for. Seventy-four percent of the variations in dropouts was explained; only 28 percent of the variance in post high school education was accounted for.

Fox used a simultaneous equation model on these data for Chicago in which reading scores and dropout rates were jointly determined.[13] The explanatory power of the model was increased, and school variables including teacher man-years, text and library book expenditures, and vocational class student hours were found to be statistically related to reading scores.

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[18]Thomas G. Fox, "Joint Production and Cost Functions for a Big-City High School System" (Paper presented to the Joint National Meeting of the American Astronautical Society and the Operations Research Society, June 17-20, 1969), as reported in Cohn, *op. cit.*, p. 250. Levin uses a simultaneous model in "A New Model of School Effectiveness," *Do Teachers Make A Difference?* (Washington, D.C.: U.S. Office of Education, 1970).

In a study made for the RAND Corporation in 1969, Kiesling collected the scores of fourth-grade pupils in ninety-seven school districts in New York State.[19] Test scores were averaged by school district for sixth graders who were present in the fourth grade for gain from Grade 4 to Grade 6, and for pupils in five groups stratified according to occupation of the family head. A multiple regression model was fitted to average pupil performance in the five occupational groupings. Independent variables included an index of average occupation for breadwinners of pupils in Grade 6, number of teachers per 1,000 pupils, expenditure per pupil on books and supplies, average salary of teachers at the top salary decile, value of school district owned property per pupil, and expenditure per pupil on principals and supervisors.

The model failed to explain differences in achievement in rural districts, and the models which used score level and those which used gain in score from the fourth grade to the sixth grade gave similar results. Teacher-pupil ratio consistently had a negative relationship to pupil performance. The most consistently important school variable was expenditure on supervision, although the salary variable was as important for the middle-class socioeconomic groups. Expenditure per pupil on books and supplies was negatively related to pupil performance.

A study made by Eric Hanushek analyzed three student samples divided on the basis of ethnic background and occupation to determine whether there were differences among teachers in terms of their

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[19]Herbert J. Kiesling, "The Relationship of School Inputs to Public School Performance in New York State," prepared for RAND Corporation, 1969.

contribution to achievement gains.[20] The following independent variables were used in this study: raw scores on the Stanford Achievement Test for first and third grades, sex of student, percent time spent on discipline by third-grade teacher, scores of second- and third-grade teachers on the Quick Word Test, years since the most recent educational experience for second- and third-grade teachers, occupation of head of household (manual or nonmanual), and years of experience with children of the particular socioeconomic level taught for second- and third-grade teachers.

The effects of teachers and classroom composition appeared to be a significant factor in the achievement of white students but not for the Mexican-American students in this study. The teacher characteristics that appeared to be most important for the white manual sample were the verbal facility of the second- and third-grade teachers, the recentness of education for the second- and third-grade teachers, and the percent of time spent on discipline by the third-grade teacher. The most important characteristics for white students from nonmanual occupational backgrounds differed. Verbal ability did not appear to be significant for this latter group, although recentness of education was again a significant factor. The number of years of experience of teachers with the socioeconomic group was also significant.

Since 1968 the National Educational Finance Project has performed studies in seven states using the educational production function approach in analyzing data. In each study the following

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[20]Eric Hanushek, "Teacher Characteristics and Gains in Student Achievement: Estimation Using Micro Data," *American Economic Review*, vol. 61, no. 2, pp. 280-88.

basic research design was used:

1. Linear regression analysis was used to identify high and low productive school districts by measuring the relationship between statistically selected input factors and a measure of student achievement.
2. Discriminant analysis was employed to determine which of several input variables measuring school and nonschool inputs was significantly associated with the classification of districts as high or low productive units.

In a study using Florida data, average district SCAT-Total scores for ninth graders in the sixty-seven school districts of the state were used as the dependent variable.[21] Percent of nonwhite students and adult education level were statistically selected as the input variables for the classification of high and low productivity districts, explaining about 75 percent of the variation in achievement among the districts. The cut-off point was established for this study at $\pm$ ½ standard deviation; twelve districts were classified as low productivity units and twelve as high productivity units. The discriminant analysis of the data used four functions composed of socioeconomic variables, in-school variables, community variables, and a composite function of all variables. The following variables were found to be significant in a positive direction in explaining the variance in productivity among districts:

1. Percent of students involved in postsecondary education.

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[21]Bob N. Cage and Earl Blekking, "The Assessment of School District Productivity in the State of Florida," *Financing the Public Schools of Florida*, prepared by the National Educational Finance Project for the Florida Department of Education (Gainesville, Florida: National Educational Finance Project, 1973).

2. Percent of teachers employed in the district from seven to fourteen years.

A third item, percent of teachers employed by the district for two years or less, was negatively significant, indicating the possible detrimental effect of high teacher employment turnover on students.

A study using Delaware data was made by Rose in 1972.[22] Using the same technique utilized in the Florida study, the following variables were found to be significant contributors in distinguishing between high and low productivity groups of school districts when fifth-grade reading achievement was used as the dependent variable:

1. Adult education level of the community.
2. Teacher experience and preparation.
3. Percent of minority enrollment.
4. Percent of high school graduates pursuing further education.

The multiple correlation coefficient between reading score and a set of in-school variables, including advanced preparation of teachers, average class size, teacher preparation, and teacher experience, was .8193, indicating that 67 percent of the variance was associated with these variables.

A similar study made for Kentucky by DeRuzzo used fourth-grade reading achievement as the dependent variable for classification.[23]

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[22]Scott N. Rose, "Variables Associated with Local School District Productivity in Delaware," *Financing the Public Schools of Delaware* (Gainesville, Florida: National Educational Finance Project, 1973), pp. 265-316.

[23]David DeRuzzo, "School District Productivity in Kentucky," *Financing the Public Schools of Kentucky* (Gainesville, Florida: National Educational Finance Project, 1973), pp. 327-65.

A composite function including the following variables was found to be the best predictor:

1. Number of Title I eligibles (negative).
2. Average teacher salary.
3. Percent of budget expended for instructional purposes.
4. Expenses for transportation.

Advanced teacher preparation accounted for more variation in production than any other in-school factor tested.

In a fourth study Rose analyzed data from two states.[24] Reading achievement scores were related to per pupil expenditures to differentiate between high and low productivity districts. Sixteen districts fell into the high and low classifications in the first state; ninety-three high productivity and ninety-seven low productivity districts were identified for study in the second state. Using only adult education level, number of ESEA Title I students, and attendance rate as independent variables in a composite discriminant function, 81 percent of the districts were correctly classified in the first state, accounting for 72 percent of the variability among districts. Ninety percent of the districts were correctly classified in the second state and 90 percent of the variation was accounted for by using a discriminant function including the following variables: income over $10,000, attendance, future training, teacher preparation, minority enrollment, average class size, advanced preparation, and pupil-support personnel ratio.

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[24]Scott N. Rose, *A Study to Identify Variables to Predict Local School District Productivity in Two States* (Ed.D. dissertation, University of Florida, 1972).

DeRuzzo studied data from two other states.[25] Expenditure per pupil and achievement test scores were used to identify high and low productivity districts. Twenty school districts in the first state and sixteen districts in the second state were identified as being high productive; thirty-three districts in the first state and thirty-two districts in the second state were identified as being low productive. Twenty variables were grouped into socioeconomic, community, in-school, and composite discriminant functions. The results of this study suggested that the percent of nonwhite student enrollment may account for most of the variation in productivity between school districts. In-school predictors reflected in the measures of teacher quality, such as beginning teacher salary and teacher certification level, appeared to be important predictors. Local fiscal effort, as measured by the extent to which a school district was using its capacity to raise revenue by taxation, appeared to be the best overall community variable that consistently improved the ability of the discriminant function to classify school districts.

The sixth study in the series, conducted by Daeufer, used achievement and expenditure data to select high and low productivity elementary schools in a large urban school district.[26] Fifteen schools were identified as high productive school centers and fifteen as low productive centers. Twenty-five independent variables were used to predict achievement in six different discriminant functions. These

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[25]David DeRuzzo, *Identification of Variables to Predict Local School District Productivity in Two States* (Ed.D. dissertation, University of Florida, 1972).

[26]Carl J. Daeufer, *A Study to Identify Variables Which Predict Elementary School Productivity* (Ed.D. dissertation, University of Florida, 1972).

included one function using all factors, one function using student-related variables, two functions dividing the factors into school and nonschool categories, and two functions developed by categorizing the factors as being either amenable to adjustment by administrative decisionmaking function or nonmanipulatable. The predictors related to student socioeconomic and teacher preparation characteristics tended to be the maximal discriminating variables of school productivity. For the school related function, the predictors related to staff sociocultural characteristics and teacher preparation and experience were the maximal discriminators. For the nonschool-related function, the predictors related to pupil socioeconomic and sociocultural traits, pupil attendance, and voter patterns associated with passing a school tax levy tended to be the maximally discriminating variables. For the administrative nondecisionmaking function, the predictors related to pupil attendance and the income level of the residents of a geographical area served by an elementary school center tended to be the maximally discriminating variables of school productivity.

Summary

The representative studies reviewed above and the studies made by the National Educational Finance Project indicate the importance of selected administratively controllable variables in the education process. Of these, teacher quality appears to be by far the most important factor. Whether defined in terms of years of experience, educational background, or specific abilities, variables measuring teacher quality have often been shown to be important in explaining

student productivity. In his California study Benson found a distinct relationship between quality of educational services and pupil performance. "We are led," he stated, "to the conclusion that caliber of teachers is the single most important factor."[27]

Another application of resources, the ratio of instructional personnel to students, has long been a source of controversy. Recent research findings have not resolved the controversy, for the reported effects of class size on student achievement are mixed. Dunnell found that smaller classes were important in explaining the achievement of seventh-graders in suburban schools in his model, and class size appeared to be an important factor for students of low and high ability in Benson's California study.[28] Vincent suggested that reduction of the pupil-teacher ratio and increases for teachers's salaries compete for funding and that political pressures are such that higher salaries are usually supported instead of additional personnel.[29]

The contributions of noninstructional personnel to the production of specific educational outcomes has received some attention in the literature, but difficulties have been encountered in isolating

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[27]Charles S. Benson, *Report of the Senate Fact Finding Committee on Revenue and Taxation, State and Local Fiscal Relationships on Public Education in California* (Sacramento, California: Senate of the State of California, 1965), p. 52.

[28]John P. Dunnell, "Input and Output Analysis of Suburban Elementary School Districts" (Paper presented at the 1971 Annual Meeting of the American Educational Research Association, New York, February 4-7, 1971), ED 047 366; Benson, op. cit., p. 52.

[29]William S. Vincent, Bernard H. McKenna, and Austin D. Swanson, "The Question of Class Size," *Research Bulletin* (Institute of Administrative Research, Teachers College, Columbia University, vol. 1, no. 1, October 1960).

the data. Results indicate that the provision of and caliber of supervisory and management personnel has been an important factor in effective management. Kiesling found that expenditures per pupil on principals and supervisory personnel were highly related to performance of pupils from professional and skilled or semi-skilled occupational backgrounds.[30] Administrative staffing was important for districts having certain characteristics, such as high unemployment, in California.[31]

The diversity of variables identified in the previous research efforts serves to emphasize the need for additional studies through which variables can be analyzed in groups, such as factors that can be controlled administratively, socioeconomic factors, or programmatic factors, to identify those associated with different levels of productivity. From the results of this type of analysis certain public policy entrance points might be identified that would permit policymakers to adjust state school support programs in a manner that would influence educational productivity.

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[30]Benson, op. cit., p. 52.

[31]Kiesling, op. cit., p. 24.

CHAPTER III

SELECTION OF VARIABLES AND DEVELOPMENT OF FUNDING MODELS

To develop funding models capable of reflecting a variety of socioeconomic, resource utilization, and programmatic characteristics of a school district, a four-phase research design was implemented. In the first phase variables related to these areas of interest were selected for consideration and placed in the appropriate grouping. The variables were subjected to principal component analysis to isolate the most explanatory factors in each subgroup in phase two. Factor scores for these factors were calculated in phase three, and these were grouped to produce model funding programs. Phase four dealt with the analysis of the impact of the developed models on funding patterns for local school districts in Florida.

Data relevant to the first three of these four phases are presented in this chapter. The first section describes the rationale for the selection of variables and the preparation of collected data for analysis. The results of principal component analysis of the variables are then detailed and the development of factor scores for the factors discovered by the principal component analysis described. Finally, the combination of factors into eight allocation models is discussed.

Selection of Variables

The criteria used for selecting variables for analysis in a research study are of great importance both in the design and the intended utilization of the research results. Some variables have long histories of research on their characteristics while others lack this type of documentation. Should the researcher utilize well-known, basic variables, or use relatively unknown factors peculiar to the particular study?

Several criteria for variable selection have been suggested in statistical literature. Rummel proposed an extensive list given in part below.[1] These criteria may be used singly or in researcher-determined combinations.

1. Theoretical importance. Data elements that relate to theory in substantive areas would be preferred.
2. Hypothetical relevance. Variables would be used that indexed hypotheses about interrelationships in an area of study.
3. Catholicity. Phenomena would be selected to represent the entire range of variation in an area.
4. Replication. To compare research results with those of other studies, variables used in those studies would be chosen.
5. Statistical sufficiency. Selected data would avoid either substantive or statistical redundancy.

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[1]R. J. Rummel, *Applied Factor Analysis* (Evanston, Illinois: Northwestern University Press, 1970), pp. 207-220.

6. Data availability. If data were equal on other selection criteria, those phenomena for which data were most easily available would be selected.
7. Reliability. For data low in reliability, phenomena having random rather than systematic errors would be included to the extent possible.

In the development of the state funding technique, the intentions were to select variables related to research in the area of educational productivity and to utilize data available through standard reporting procedures. The replicability of the model development was also considered important; therefore, variables were desired for use in constructing funding models built on Florida data that would enable replication and comparison with future applications of the developed technique in other states. Consequently, hypothetical relevance was not stressed in variable selection; because of the statistical analyses to be employed, the criterion of statistical sufficiency was not considered an appropriate guideline.

In addition to the guidelines described above, several other considerations entered into the selection of variables. First, variables were selected, based on the related research, in terms of their potential capacity to discriminate among school districts in socioeconomic, resource utilization, and programmatic characteristics. Second, data were collected for the 1972-73 school year whenever possible. Third, because of the wide differences in size of school districts in Florida, variables were expressed in percentage form whenever possible to eliminate the overwhelming effect of size in comparing data among districts. Finally, the use of data from

sources other than the Florida Department of Education was facilitated by the organization of school districts in Florida on a county unit basis.

The socioeconomic variables are presented in Appendix 2, Part A. The intent was to identify measures of social, economic, and demographic conditions within school districts. Federal census data for 1970 were used, and state figures on referrals to juvenile courts were obtained from the Florida Department of Health and Rehabilitative Services.

Part B of Appendix 2 contains a listing of resource utilization variables. These items represent local school system decisions on the use of fiscal, human, and material resources. Data were collected from internal department reports and publications of the Florida Department of Education.

Programmatic variables appear in Part C of Appendix 2. Detailed programmatic data were not available for the 1972-73 school year; therefore, full-time equivalent pupil (FTE) and weighted full-time equivalent pupil (WFTE) data for 1973-74 were accepted as proxies for programs in the earlier year. Funding categories for special and vocational education FTE and WFTE data were each summed to obtain aggregate program figures. Achievement data, including standardized test scores from the statewide testing program for high school seniors and the results of the statewide criterion testing program for Grades 3, 6, and 9, were also included in this subgroup as measures of student need for additional programs. Other variables, such as percent of nonpromotions in Grades K-12, dropouts in Grades 10-12 as a percent of average daily membership, and percent of graduates not

immediately continuing their education in vocational or academic institutions were included as possible indexes of need for programs within a school system.

As an initial step in data analysis, the mean, standard deviation, kurtosis, skew, range, and minimum and maximum scores were calculated for each variable using the subprogram CONDESCRIPTIVE of the Statistical Package for the Social Sciences (SPSS).[2] These statistics were then used to check the data and to gain further insights into the type of data being used in the study. For example, by examining the range and minimum and maximum scores, it was possible to detect keypunch errors and format errors. Information on the skew and kurtosis of each variable revealed that the variables were normally distributed in only a very limited number of instances. Since certain statistical procedures, including multiple regression and factor analysis, require that data be normally distributed, this information allowed correcting transformations of the data to be made.

A transformation is any systematic alteration of a set of scores in which some undesirable characteristics, in this case skew and kurtosis greater than or less than zero, are altered while other characteristics, such as rank order, remain unchanged. The following four types of transformations were calculated for each variable:

1. Reciprocal transformation: $X' = 1/X$
2. Square root transformation: $X' = \sqrt{X}$
3. Square root transformation for small numbers:
   $X' = \sqrt{X} + \sqrt{X + .5}$

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[2]*SPSS: Statistical Package for the Social Sciences* (University of Chicago, 1970).

4. Logarithmic transformation for small numbers:

$$X' = \log_{10}(X + 1)$$

Appendix 3 provides a listing of the transformations that proved most successful in normalizing each variable. Variable identifications were changed from a VAR- prefix to a TRN- prefix to indicate transformation of the basic data for those variables affected.

Development of Factors

In the second phase of the study principal component analysis was applied to the variables of the socioeconomic, resource utilization, and programmatic subgroups to extract sets of variables, or factors, that were orthogonal, or uncorrelated. These factors were then analyzed for use in the allocation models.

Principal Component Analysis

Principal component analysis is a form of factor analysis that orders the variables in terms of the amount of variance they explain, thus defining the basic dimensions of the data. In effect, the technique systematically reduces a large number of variables to a smaller number of common factors that explain the greatest amount of variance in the data. All sources of variance, including common, specific, and random error variance, are used in the calculation.

The first principal component, or Factor 1, is the linear combination of variables accounting for more of the variance in the data as a whole than any other linear combination of variables. The second factor is the second best linear combination of variables that is independent of the first; that is, the second factor must account

for variance not explained by the first factor. Factors are thus extracted until all of the variance in a data set is eliminated. To minimize the number of factors and maximize the number with high loadings for each variable, the factor axes are usually rotated around the origin until they are optimally aligned with the clusters of intercorrelated variables constituting the factors. The SPSS subprogram FACTOR was used for this analysis, and PA1, principal factoring with iteration, was specified as the initial factor solution with VARIMAX rotation.

By means of repeated principal component analyses, the large number of variables available for inclusion in each subgroup was decreased to a number of variables that provided maximum explanation of variance with the minimum number of variables. Moreover, variables that were highly intercorrelated, variables that were highly correlated with size, or variables that would not be politically practicable for inclusion in a state funding program, such as percent of illegitimate births, were dropped from further consideration.

Factor Grouping

Through principal component analysis the forty-eight socioeconomic variables were reduced to three factors with eigenvalues greater than one explaining 72.4 percent of the variance in the data. Eigenvalues are equal to the sum of the column of squared loadings for each factor. Normally, only those factors are retained that have an eigenvalue equal to, or greater than, [illegible], thus ensuring

that only components accounting for at least the amount of average variance of a variable will be treated as significant.[3]

Table 2 contains the varimax rotated factor matrix for the three socioeconomic factors, the variable names, the variable loadings on each factor, and the percentage of variance explained by each factor. The factors for the socioeconomic data were named S1, S2, and S3 in the order of their statistical importance.

The variable loading for a factor is the correlation of that variable with the factor. Factor 1, for example, is primarily defined by median years of school completed, population per square mile, percent change in population, and juvenile referrals to court as a percent of the population ages 5-17 years.

In this set of factors some variables reflect demographic conditions or characteristics and others are indicative of social behavior. Variables that were primarily economic measures did not correlate highly enough with any factor to be included. Note that although the juvenile delinquency variable loaded heavily with the density-population mobility-education level factor P1 and with the unemployment focus of Factor S3, the juvenile delinquency-unemployment measure appeared to be unrelated to the minority population-high crime rate characteristics measured by Factor S2.

Three factors were also identified for the resource utilization variables. In combination, these three factors, shown in Table 3, explained 60.3 percent of the variance in the data. Two factors, pupil-instructional personnel ratio and percent of experienced

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[3]*SPSS: Statistical Package for the Social Sciences*, op. cit., p. 219. See also Rummel, op. cit., pp. 362-364.

TABLE 2

SOCIOECONOMIC FACTORS

Variable Number	Variable Name	Factor Loadings Factor S1	Factor S2	Factor S3
TRN039	Median Years of School Completed	0.90002	-0.00233	-0.10154
TRN010	Population per Square Mile	-0.79418	0.04792	-0.00165
TRN181	Percent Change in Population 1960-70	0.70936	0.28237	-0.16931
TRN018	Juvenile Referrals as Percent Population Ages 5-17	-0.62513	0.06394	-0.56142
TRN045	Arrest Rate per 1,000 Population	-0.13900	0.84018	-0.03502
TRN013	Percent Nonwhite Population	0.26587	0.80028	0.18320
TRN041	Percent Unemployed	-0.23193	0.13181	0.86468
Percent of Variance Explained		35.9	21.2	15.3

TABLE 3

RESOURCE UTILIZATION FACTORS

Variable Number	Variable Name	Factor Loadings Factor R1	Factor R2	Factor R3
TRN207	Percent Teachers with Ed.D./Ph.D. Degrees	0.76687	0.16315	0.22841
VAR204	Percent Teachers with B.A. Degrees	-0.72234	0.27239	0.17266
TRN207	Percent Teachers with Continuing Contracts and Seven or More Years of Experience	0.50412	0.09860	-0.67895
VAR205	Percent Teachers with Annual Contracts	0.17418	0.71620	0.34948
TRN025	Teaching Materials as a Percent of Total Current Expenditures	0.15278	-0.67438	0.07682
TRN027	Pupil-Instructional Personnel Ratio	-0.01596	-0.58011	0.51280
TRN024	Health Expenditures as a Percent of Total Current Expenditures	0.14210	0.09356	0.65709
Percent of Variance Explained		22.1	20.2	18.0

teachers, contributed to more than one factor. Variables related to teacher training and experience had the highest level of importance in this subgroup of variables.

Two programmatic factors were defined, explaining 67.7 percent of the variance in the data set. These factors and their loadings are listed in Table 4. Variables related to school completion and continuation of education were found in both factors. The factor containing the achievement variable, P1, was a strong factor in terms of the high correlations that all variables present had with it.

Calculation of Factor Scores

After factor loadings were obtained for each subset of variables, factor scores for each factor were calculated. Factor scores are standardized composite measures representing the theoretical dimensions associated with the respective factors. There are several approaches to computing factor scores, including exact computation of factor scores, regression estimates, and composite estimates. The SPSS subprogram FACTOR calculated exact factor scores for each of the eight factors developed.[4]

Appendix 4, Parts A, B, and C, presents factor scores for each of the eight factors for each district. Table 5 gives the range of scores found for each factor. Factors S1 and S2 are less well-balanced than the remaining six factors, indicating that the diversity of conditions was not as great among the districts for the characteristics measured by these factors.

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[4]The SPSS program formerly used composite estimation. For a discussion of the availability of the exact computation option, see update publication I-053-235-02.

TABLE 4

PROGRAMMATIC FACTORS

Variable Number	Variable Name	Factor Loadings Factor P1	Factor P2
TRN036	Percent Graduates Not Immediately Continuing Their Education in a Vocational or Academic Institution	0.85789	0.19922
TRN183	Twelfth Grade Aptitude Raw Score	-0.78657	0.13996
VAR210	Average Daily Membership as a Percent of Weighted Full-time Equivalent Pupils	0.38012	0.76208
TRN031	Percent Change in Membership from First Month to Ninth Month, Grades 10-12	-0.40050	0.67360
Percent of Variance Explained		40.7	27.0

TABLE 5

RANGES OF FACTOR SCORES FOR EIGHT FACTORS

Factor	Range
S1	-3.2 to 1.4
S2	-1.1 to 4.9
S3	-2.8 to 2.4
R1	-1.8 to 2.6
R2	-2.4 to 2.7
R3	-2.0 to 3.0
P1	-2.0 to 2.4
P2	-2.0 to 3.3

Correlation coefficients for the factor scores were calculated using the procedure FACTOR of the Statistical Analysis System.[5] Table 6 provides the resulting correlation matrix. This analysis indicated that socioeconomic Factor S1, including variables measuring population density and mobility, educational level, and juvenile delinquency, was correlated at the .79 level with the programmatic Factor P1. This latter factor was primarily defined by student achievement and postsecondary education. Consequently, the use of these two factors simultaneously in funding models was controlled, The next largest correlations, R2 with S1 and R2 with P1, were not considered high enough to require contr...

[5]SAS: *A User's Guide to the Statistical Analysis System* (Raleigh, North Carolina: North Carolina State University, 1972).

TABLE 6

CORRELATION MATRIX FOR FACTOR SCORES

	S1	S2	S3	R1	R2	R3	P1	P2
S1	1.00000	-0.00008	0.00003	0.29694	-0.45033	0.18245	-0.79983	0.19293
S2	-0.00008	1.00000	0.00003	0.08783	0.26890	0.11455	-0.03063	0.01292
S3	0.00003	0.00003	1.00000	-0.11049	-0.08195	0.00846	-0.12973	0.07695
R1	0.29694	0.08783	-0.11049	1.00000	0.00050	-0.00029	-0.09035	0.29312
R2	-0.45033	0.26890	-0.08195	0.00050	1.00000	0.00135	0.62583	0.16401
R3	0.18245	0.11455	0.00846	-0.00029	0.00135	1.00000	-0.22820	-0.14802
P1	-0.79983	-0.03063	-0.12973	-0.09035	0.62583	-0.22820	1.00000	0.00207
P2	0.19293	0.01292	0.07695	0.29312	0.16401	-0.14802	0.00207	1.00000

Development of Funding Models

In the third phase of the research design, the factor scores for each factor were used in various combinations in regression equations to establish funding levels for each school district. That is, the factor scores of a selected set of factors were regressed against actual per pupil expenditures for 1972-73 to predict a funding level based on the need for programs measured by the factors.

Initially, stepwise multiple regression against 1972-73 per pupil expenditures was used to determine the combination of factors responsible for explaining the greatest amount of variance in the data. The SAS procedure STEPWISE was used for this purpose. Factors R1, R3, and P2 emerged with a significance level of .0001 and a squared coefficient of multiple correlation equal to .76. Limitations were placed on the program that permitted only the addition of those factors whose significance level was equal to, or less than, .10 and the retention of those factors in the model whose significance level remained less than, or equal to, .10 after the addition of other terms.

A free regression was then run in which all factors were regressed against 1972-73 per pupil expenditures and allowed to enter the equation according to their explanatory power. Table 7 presents the resulting intercept for the equation and the beta coefficients for each factor. As indicated in the table, the strongest factors, in terms of size of beta coefficients, were R3, R1, and P2. Factor R2 was the fourth strongest factor.

TABLE 7

INTERCEPT AND BETA COEFFICIENTS FOR FREE REGRESSION OF FACTORS AGAINST PER PUPIL EXPENDITURES

Factors	Value
Intercept	748.7946
S1	1.2459
S2	0.2351
S3	5.3829
R1	29.0739
R2	10.0359
R3	-44.5624
P1	-7.0430
P2	11.1518

A program using the SAS procedure RSQUARE was used to determine whether more variance could be explained by the addition of some combination of other factors to the R1 R3 P2 model. Table 8 shows the thirty-one combinations possible and the total amount of variance explained. None of the possible models appears to be significantly stronger than any of the others.

Based on this information the following eight funding models were determined for use in predicting funding levels:

Model 1 R1 R3 P2

Model 2 R1 R3 P2 P1

Model 3 R1 R3 P2 S1 S2 S3

TABLE 8

THE EXPLANATORY POWER OF ALL POSSIBLE REGRESSION MODELS ADDING ONE OR MORE FACTORS TO THE BASE MODEL R1 R3 P2

Factor(s)	R^2
S1	0.7575
P1	0.7578
S2	0.7589
R2	9.7612
S3	0.7634
S1 P1	0.7578
S1 P2	0.7596
S2 P1	0.7598
S2 R2	0.7619
S3 P1	0.7638
S2 S3	0.7654
S1 S3	0.7640
S1 R2	0.7661
S3 R2	0.7690
R2 P1	0.7710
S1 S2 P1	0.7599
S1 S3 P1	0.7640
S2 S3 P1	0.7658
S1 S2 S3	0.7660
S1 S2 R2	0.7665
S2 S3 R2	0.7697
S2 R2 P1	0.7710
S1 R2 P1	0.7710
S1 S3 R2	0.7745
S3 R2 P1	0.7773
S1 S2 S3 P1	0.7661
S1 S2 R2 P1	0.7711
S1 S2 S3 R2	0.7748
S2 S3 R2 P1	0.7773
S1 S2 S3 R2	0.7774
S1 S2 S3 R2 P1	0.7774

Model 4 R1 R3 P2 S2 S3 R2 P1

Model 5 R1 P1 S1

Model 6 R1 R3 P2 S1

Model 7 Weighted S1 R1 R3 P2

Model 8 Weighted P1 R1 R3 P2

Model 1, R1 R3 P2, was adopted as a base model as a result of the stepwise regression procedure. The factors reflected primarily teacher education and experience, pupil-teacher ratio, program requirements, and pupil mobility in Grades 10-12.

In Model 2, R1 R3 P2 P1, the student achievement factor was added to obtain a model including all of the information available in the factors on the programmatic needs of pupils. Similarly, Model 3 included all of the socioeconomic factors. This combination of the socioeconomic factors was especially desirable in light of the small beta coefficients, relative to the other factors, noted in Table 7.

Model 4 included all of the factors except S1, which was excluded because of its relatively high correlation with P1. The beta coefficient of Factor P1 was sufficiently stronger than that for Factor S1 to recommend Factor P1's inclusion.

The fifth model, R1 P1 S1, represents the combination of the first factor scores in each subgroup of variables. However, because of the disparity in strength among the variables, this model was theoretically inefficient, although the potential for discriminating among districts appeared to be high.

In Model 6, R1 R3 P2 S1, the first socioeconomic factor was added to the base model. This model should be compared to Model 2 in which the factor correlated with S1, P1, was added to the base model.

Two additional models were generated in which the beta coefficient for one factor found in free regression was weighted in relation to the other factors included in the model. In the first instance a weighted Factor S1 was entered first into the equation, followed by R1, R3, and P2; similarly, in the second case a weighted Factor P1 was entered first. Because of the difference between the relative magnitude of the beta coefficient of S1 and the coefficient of each of the three factors to follow it, the beta coefficient for S1 was multiplied by ten and entered into the following equation:

Model 7

$P = 748.79 + 10(1.25)(S1) + 29.07(R1) - 44.56(R3) + 11.15(P2)$.

Factor P2 required only a weighting of two to produce a beta coefficient approximating the smallest of the other three factors. The weighted coefficient was entered into the following equation to form the eighth funding model:

Model 8

$P = 748.79 - 2(7.04)(P1) + 29.07(R1) - 44.56(R3) + 11.15(P2)$.

For each model specified above a regression was run to determine the predicted allocation for each district. These results are presented in Appendix 5, Parts A, B, C, D, E, F, G, and H.

In addition, a polynomial curve-fitting procedure was used to determine the number of exponential expressions to be included in an equation plotting the curve of best fit for each of the allocation models. The results of Model 4 were best described by a first degree curve, or straight line. Models 1, 2, and 3 were described by a fifth-degree curve, and a sixth-degree curve was found to be most appropriate for Model 5 and Model 6.

Plots of the predicted allocation levels combined with the curve of best fit were made as a part of the regression program and are provided in Appendix 6, Parts A, B, C, D, E, and F. Plots for the two models in which factors were weighted were not made since regression was not involved in those cases.

CHAPTER IV

ANALYSIS OF THE FUNDING MODELS

Each of the funding models was analyzed in terms of its impact on the flow of funds for financing public schools in the sample composed of school districts within the State of Florida. In this chapter the funding models are first described, followed by a discussion of results of two types of analysis. The first type consisted of tallies of the number of districts gaining and losing revenue in classifications of districts based on property wealth, per capita income, population density, and student achievement. In the second analysis the combined characteristics of the districts gaining or losing fifty to ninety-nine dollars per pupil and one hundred or more dollars per pupil were determined for each model.

Description of Funding Models

This section describes the construction of the eight funding models. Each model is outlined in terms of the factors included.

Model 1 (R1 R3 P2)

Model 1 was chosen as a base model as a result of the stepwise regression procedure in which Model 1 was shown to have the greatest degree of explanatory power for the data set examined. Theoretically, the model responded primarily to pupil personnel ratio, percentage of teachers with minimum educational qualifications, and number of

older, more experienced teachers (Factors R1 and R3). Factor P2, describing the total program enrollment, was also included. Table 9 provides a listing of the variables included in each factor of this and the other seven models.

Model 2 (R1 R3 P2 P1)

In Model 2 the factor containing student achievement information, P1, was added to Model 1. This model included all of the information available in the factors on the programmatic needs of the student population.

Model 3 (R1 R3 P2 S1 S2 S3)

All of the socioeconomic factors (S1 S2 S3) were added to the basic model in Model 3. This model was designed to utilize all of the socioeconomic information available in the factors. Factor S1 could be termed a measure of the needs of different population densities; Factor 2, for Florida data, appeared to be a measure largely focused on rural districts. Factor S3 reflected unemployment and degree of juvenile delinquency.

Model 4 (R1 R3 P2 S2 S3 R2 P1)

Model 4 contained all of the formulated factors, with the exception of S1. Factor P1 and Factor S1 had a correlation coefficient of .79; consequently, the two factors were not used together in any model except Model 5. The beta coefficient of Factor P1 was sufficiently larger than the coefficient for Factor S1 to recommend the inclusion of Factor P1 in this model rather than Factor S1.

TABLE 9

PRIMARY VARIABLES OF THE EIGHT FACTORS

Factor	Variables Included
S1	Population Per Square Mile Referrals to Juvenile Courts as a Percent of Total Population Ages 5-17 Percent Change in Population 1960-70 Median Years of School Completed
S2	Nonwhite Population as a Percent of Total Population Arrest Rate Per 1,000 Population
S3	Referrals to Juvenile Courts as a Percent of Total Population Ages 5-17 Percent Unemployment
R1	Teachers with Doctorate Degrees as a Percent of Total Teachers Teachers with B.A. Degrees as a Percent of Total Teachers Teachers with Continuing Contracts and Seven or More Years of Experience as a Percent of Total Teachers
R2	Teachers with Annual Contracts as a Percent of Total Teachers Expenditures for Teaching Materials as a Percent of Total Current Expenditures Pupil-Instructional Personnel Ratio
R3	Teachers with Continuing Contracts and Seven or More Years of Experience as a Percent of Total Teachers Health Expenditures as a Percent of Total Current Expenditures Pupil-Instructional Personnel Ratio
P1	Percent Graduates Not Immediately Continuing Their Education in an Occupational Training or Academic Institution Average District Aptitude Raw Score for Twelfth-Graders on the Statewide Testing Program

TABLE 9 (Continued)

Factor	Variables Included
P2	Average Daily Membership as a Percent of Total Weighted Full-time Equivalent Pupils Change in Membership from First Month to Ninth Month, Grades 10-12

Note: Although other variables in the subgroup also contributed to the strength of a factor, only those variables with loadings in excess of .50 were included in this listing.

Model 5 (R1 P1 S1)

The strongest factors of each subgroup were used in creating Model 5. This was the most parsimonious model, in terms of the number of variables required, that used all of the three dimensions of available information. This model had a high potential for discriminating among districts; however, the disparity in strength of the beta coefficients for the three factors curtailed this effectiveness for the data set examined.

Model 6 (R1 R3 P2 S1)

Model 6 was a variation of the basic model to which Factor S1 was added. The impact of this model should be compared with that of Model 2 in which Factor P1, correlated with Factor S1 at the .79 level, was used in the same position.

Model 7 (Weighted S1 R1 R3 P2)

In Model 7 a public policy decision was made to emphasize the needs of districts identified by Factor S1. A weight of ten times the normal beta coefficient for Factor S1, as determined in the free regression procedure, was used, and the weighted Factor S1 was entered in an equation before the factors of the base model, R1, R3, and P2, were entered. The beta coefficient of Factor S1 was in this manner made as robust as the smallest of the coefficients (that of Factor P1) of the factors entered after it in the equation.

Model 8 (Weighted P1 R1 R3 P2)

Similarly, in Model 8 a weighted Factor P1 was added to the base model. In this variation the student achievement factor, P1, was

made influential in determining the flow of funds by doubling the beta coefficient so that it was approximately as strong as the beta coefficient of Factor P1 in the equation.

Increases and Decreases in Funding Among Districts

In Table 10 a list is provided of the differences between the actual 1972-73 per pupil expenditure for each district and the per pupil expenditure predicted by each funding model when this amount was in excess of fifty dollars. Appendix 7 presents the difference between actual and predicted expenditures, regardless of amount, for each district under the eight models. These data were compared to determine the characteristics of each model in terms of impact of the flow of funds among the districts. A total count of the number of districts gaining and losing funds is given in Table 11. The total number affected, regardless of the amount of the change, is stated, and separate tallies are given for changes of between fifty and one hundred dollars per pupil and changes of one hundred or more dollars per pupil.

The results of the base model, R1 R3 P2, were divided evenly between increases and decreases in funds. All but four of the changes were for less than fifty dollars, and there was only one change, a decrease in allocation level, of more than one hundred dollars.

Model 3 (R1 R3 P2 S1 S2 S3) and Model 4 (R1 R3 P2 S2 S3 R2 P1), the most complex models in terms of the number of factors included, had fewer total gains than the other models, but more of these gains than those supplied by other models were for fifty dollars or more.

TABLE 10

DISTRICTS GAINING AND LOSING MORE THAN $50
PER PUPIL UNDER EIGHT FUNDING MODELS

District Number	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
1					50.981			
2		65.307		75.999	68.260			
3					58.952	50.496		
5			87.995		54.389	54.557	54.315	69.557
8	-88.391	-96.057				-75.674		-55.417
9			50.720			70.391		
10	76.043	69.988	136.412	115.954	122.297	95.681		
11				-54.377				
13		-59.355		-107.029	-77.163			
14			-68.149		-80.364			
18	-54.453		-66.133		-89.738	-82.967		
20	51.195	75.238	54.012	71.848	61.403		59.845	59.025
21				61.675				
22	-64.689		-73.742		-101.801	-112.989		-50.857
24			-77.790	-50.486	-96.251			
26							-70.105	-70.479
27							-57.516	-61.996
30			86.405	61.448			-55.791	
31	-50.821	-66.938	-55.290	-72.112	-58.998			
33		54.701		56.234	60.240			
38							-52.897	-60.285
39		50.788				-65.001		

TABLE 10 (Continued)

District Number	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
40		56.944	64.621	65.893	60.824			
41				-53.317				
43	-107.239	-135.990	-124.696	-143.266	-151.368	-109.280	-87.097	-94.454
46			72.519	73.787		68.371		
47		65.110	63.611	63.433				
50		-58.004		-101.677				
51	71.711	50.738	113.074	88.178	66.217	76.579		
52	60.289		54.159			57.257	52.083	61.304
55		-50.629		-57.192	-95.356			
58				-74.883				
59	50.569		57.265		63.574	58.914		
60		69.098		63.411	87.600			
62	-54.800					-50.432	-76.889	-68.759
63		59.341		81.741	80.682			
65		92.322		101.154	73.907			
67			-55.273	-79.457	-117.620	-63.223	-50.475	-56.757

TABLE 11

NUMBER OF DISTRICTS GAINING AND LOSING FUNDS UNDER EIGHT FUNDING MODELS

Model	Total Gains	Gain of $50-$100	Gain of More Than $100	Total Losses	Loss of $50-$100	Loss of More Than $100
Model 1 (R1 R3 P2)	33	4	0	34	4	1
Model 2 (R1 R3 P2 P1)	31	11	0	36	5	1
Model 3 (R1 R3 P2 S1 S2 S3)	27	8	2	38	7	0
Model 4 (R1 R3 P2 S2 S3 R2 P1)	27	10	3	40	8	3
Model 5 (R1 P1 S1)	35	12	1	32	5	3
Model 6 (R1 R3 P2 S1)	33	6	0	35	6	2
Model 7 (Weighted S1 R1 R3 P2)	39	3	0	28	7	0
Model 8 (Weighted P1 R1 R3 P2)	40	3	0	27	8	0

Concomitantly, these two models reduced a greater number of allocations than did the other models.

Model 7 (Weighted S1 R1 R3 P2) and Model 8 (Weighted P1 R1 R3 P2) resulted in the largest number of districts gaining revenue; however, these gains were primarily for less than fifty dollars per pupil. Only three districts in either model received from fifty to ninety-nine dollars, and no allocations were increased by one hundred dollars or more. The numbers of allocation decreases under these models were the least of the eight models; again, no district lost more than one hundred dollars.

Impact of the Eight Models on Five Criteria

The effect of each model was further analyzed by examining the degree to which the per pupil allocations, relative to actual 1972-73 expenditure levels, were changed. In Tables 12 through 16 districts gaining or losing more than fifty dollars per pupil, based on the 1972-73 funding level, are categorized according to the following five criteria: assessed valuation per pupil, per capita income, number of students in average daily membership, population density, and a measure of student achievement. The classifications of districts used in these analyses are provided in Appendices 8 through 12.

Assessed Valuation of Property Per Pupil

The data presented in Table 12 relate the number of districts whose allocations were affected by more than fifty dollars per pupil classified by the property wealth per pupil of the district. All of the models, with the exception of one case under Model 7 (Weighted S1 R1 R3 P2), gave increases to districts having an assessed valuation

TABLE 12

NUMBER OF DISTRICTS GAINING AND LOSING $50 OR MORE UNDER EIGHT FUNDING MODELS FOR DISTRICTS CLASSIFIED BY PROPERTY WEALTH PER PUPIL

Model	Assessed Valuation Per Pupil							
	≤ $10,000		$10,001-$20,000		$20,001-$40,000		$40,001 +	
	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
1	1	0	2	0	1	2	0	4
2	1	0	8	0	2	4	0	0
3	2	0	5	2	4	2	0	3
4	2	0	9	2	2	4	0	5
5	1	0	9	2	3	2	0	4
6	0	0	2	2	3	1	0	5
7	1	1	1	2	1	3	0	1
8	1	0	1	1	1	4	0	3

Note: See Appendix 8 for classification of districts according to property wealth per pupil.

per pupil of $10,000 or less and decreased the allocation to districts having property wealth of $40,001 or more per pupil. Model 1 (R1 R3 P2) and Model 2 (R1 R3 P2 P1) did not decrease the allocation of any district in the $10,001 to $20,000 range. Much the opposite effect was achieved by Model 7 (Weighted S1 R1 R3 P2) and Model 8 (Weighted P1 R1 R3 P2), which did not, except in one case each, give increased allocations to districts in either the $10,001 to $20,000 range or the $20,001 to $40,000 range.

Per Capita Income

Table 13 contains the tallies of districts, ranked according to per capita income, whose resources were changed by fifty or more dollars per pupil. A marked difference was found in the number of increased allocations for districts with a mean income of less than, or equal to, $3,000 and the number of increases for districts with a per capita income of more than $3,001. However, the allocations for districts in the latter income group were not substantially decreased by any of the models. Only in the case of Model 2 (R1 R3 P2 P1) and Model 4 (R1 R3 P2 S2 S3 R2 P1) were as many as two district allocations cut by fifty or more dollars. Model 4 (R1 R3 P2 S2 S3 R2 P1) and Model 8 (Weighted P1 R1 R3 P2) resulted in one decreased allocation each for the high income category.

Models 2 (R1 R3 P2 P1), 4 (R1 R3 P2 S2 S3 R2 P1), and 5 (R1 P1 S1) appeared especially effective in making a larger number of increased allocations while minimizing the number of decreased allocations for districts with a per capita income of $2,000 or less. Model 7 (Weighted S1 R1 R3 P2) and Model 8 (Weighted P1 R1 R3 P2) were much less effective in this regard; both models had very little effect on increasing

TABLE 13

NUMBER OF DISTRICTS GAINING AND LOSING $50 OR MORE UNDER EIGHT FUNDING MODELS FOR DISTRICTS CLASSIFIED BY PER CAPITA INCOME

Model	Income Per Capita							
	≤ $2,000		$2,001-$3,000		$3,001-$4,000		$4,001 +	
	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
1	1	1	2	5	1	0	0	0
2	7	0	3	4	0	2	0	0
3	3	4	6	3	2	0	0	0
4	9	2	4	7	0	2	0	1
5	7	4	5	3	0	1	1	0
6	2	3	2	5	0	0	2	0
7	1	5	0	2	0	0	2	0
8	1	3	0	4	1	0	1	1

Note: See Appendix 9 for classification of districts according to per capita income.

allocations when increases of fifty dollars or more were considered alone. However, Models 7 and 8 were each responsible for the largest number of increases when all amounts were counted.

Average Daily Membership

Allocation increases of fifty dollars or more are detailed in Table 14 for districts categorized according to the number of pupils in average daily membership. No increases were found for school districts with 100,001 or more pupils in average daily membership. On the contrary, very few decreases in allocations were predicted for districts having 12,001 or more students. Only Model 2 (R1 R3 P2 P1) and Model 5 (R1 P1 S1) increased allocations for districts with 2,000 or fewer pupils. Districts in the 2,001 to 12,000 range were most affected by the models; however, no distinct patterns of impact were detected.

Population Density

The effects of the eight models on districts classified according to population density are given in Table 15; again, only changes of fifty or more dollars were recorded. The urban impact of the models was very limited; only Model 3 (R1 R3 P2 S1 S2 S3), Model 6 (R1 R3 P2 S1), and Model 7 (Weighted S1 R1 R3 P2) showed a tendency to channel funds to urban areas. The allocations for rural districts were decreased in more cases than they were increased by Models 1 (R1 R3 P2), 6 (R1 R3 P2 S1), 7 (Weighted S1 R1 R3 P2), and 8 (Weighted P1 R1 R3 P2); however, all other models favored rural areas. Only Model 3 (R1 R3 P2 S1 S2 S3) and Model 5 (R1 P1 S1) gave more increases than decreases in allocations to districts classified as urbanized rural.

TABLE 14

NUMBER OF DISTRICTS GAINING AND LOSING $50 OR MORE UNDER EIGHT FUNDING MODELS FOR DISTRICTS CLASSIFIED BY THE NUMBER OF PUPILS IN AVERAGE DAILY MEMBERSHIP

Model	Average Daily Membership											
	≤ 2,000		2,001-5,000		5,001-12,000		12,001-25,000		25,001-100,000		100,001 +	
	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
1	0	2	0	1	2	2	0	0	2	0	0	0
2	3	0	5	0	2	4	1	0	0	1	0	1
3	0	2	3	3	3	2	1	0	4	0	0	0
4	3	0	6	2	2	5	1	2	1	1	0	1
5	2	2	4	3	2	2	3	0	2	0	0	1
6	0	3	0	2	2	3	1	0	3	0	0	0
7	0	1	0	4	1	2	0	0	2	0	0	0
8	0	1	0	4	1	3	1	0	1	0	0	0

Note: See Appendix 10 for classification of districts according to the number of pupils in average daily membership.

TABLE 15

NUMBER OF DISTRICTS GAINING AND LOSING $50 OR MORE UNDER EIGHT FUNDING MODELS FOR DISTRICTS CLASSIFIED BY POPULATION

Model	District Description					
	Urban		Rural		Urbanized-Rural	
	Gain	Loss	Gain	Loss	Gain	Loss
1	1	0	1	3	2	3
2	0	2	9	1	1	3
3	2	0	5	5	3	2
4	0	3	10	5	2	3
5	1	1	8	5	4	2
6	2	0	2	5	2	3
7	2	0	1	6	0	0
8	1	0	2	6	0	2

Note: See Appendix 11 for classification of districts according to population density.

Student Achievement

Table 16 details changes of fifty or more dollars in revenues per pupil for districts categorized in quartiles based on the district raw score on twelfth-graders on the aptitude portion of the Florida statewide standardized testing program. Factor P1, the measure containing the variable used in this classification, was included in Models 2, 4, 5, and 8. Of these only Model 2 (R1 R3 P2 P1), Model 4 (R1 R3 P2 S2 S3 R2 P1), and Model 5 (R1 P1 S1) seemed to supply more funds to districts in the fourth, the lowest, quartile. Model 4 (R1 R3 P2 S2 S3 R2 P1) also gave a greater number of increases to districts in the third quartile than any other model. More districts in the first quartile received increased allocations under Model 3, which included all of the socioeconomic factors. Models 5 (R1 P1 S1), 6 (R1 R3 P2 S1), and 7 (Weighted S1 R1 R3 P2) split evenly among increases and decreases for districts in the first quartile.

Characteristics of Individual Models

To clarify further the nature of the eight funding models, results of the model applications for districts classified according to assessed valuation per pupil, per capita income, and number of students in average daily membership, as presented in Appendices 8 to 11, were examined. The results are summarized in Tables 18 to 25.

For the purposes of Tables 18 to 25, the data classifications for property wealth per pupil, per capita income, and average daily membership, listed in Appendices 8 to 11, were categorized as either high, medium, or low for each district. Table 17 below gives the boundaries for each characteristic used in these classifications.

TABLE 16

NUMBER OF DISTRICTS GAINING AND LOSING $50 OR MORE UNDER EIGHT FUNDING MODELS FOR DISTRICTS CLASSIFIED BY STUDENT ACHIEVEMENT

Model	Student Achievement							
	Top Quartile		Second Quartile		Third Quartile		Bottom Quartile	
	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
1	3	4	0	1	0	1	1	0
2	1	4	0	1	2	1	7	0
3	5	3	0	0	2	1	3	3
4	2	6	1	3	3	1	7	1
5	3	3	2	0	2	2	6	3
6	4	4	1	1	1	0	0	3
7	2	2	0	1	0	2	4	2
8	1	3	0	2	1	1	1	2

Note: The mean Aptitude Score of twelfth-graders was used in Factor P1. The same score was used here to classify districts into quartiles for the purpose of gaining an estimate of the impact of the funding models with regard to this dimension.

TABLE 17

DEFINITIONS OF CHARACTERISTICS FOR CLASSIFICATION PURPOSES

Characteristic	Classification High	Medium	Low
Property Wealth Per Pupil	$40,001 +	$20,001 - $40,000	≤ $20,000
Per Capita Income	$4,001 +	$2,001 - $4,000	≤ $2,000
Average Daily Membership	25,001 +	5,001 - 25,000	≤ 5,000

Model 1 (R1 R3 P2)

The district characteristics for Model 1 are presented in Table 18. Under this model districts having an assessed valuation per pupil of less than, or equal to, $20,000 were primarily favored; districts with a property value of $20,001 or more did not receive increments. Pinellas County, with a wealth per pupil in the $20,001 to $40,000 range, was an exception.

The effect of Model 1 was not well defined by per capita income for districts gaining funds. Most of the districts losing revenue, however, had per capita incomes in the $2,001 to $4,000 range. Glades County, belonging to the set of districts with per capita incomes of less than, or equal to, $2,000, was an exception.

All of the districts receiving additional funds under Model 1 had 12,001 or more pupils in average daily membership. On the other hand, all districts receiving decreased allocations had fewer than 12,000 pupils in average daily membership.

TABLE 18

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 1 (R1 R3 P2)

	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
Ranking	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Charlotte Flagler Glades *Martin	Pinellas		Pinellas Seminole		Pinellas	
Medium	Pinellas	Indian River	Clay Seminole	Charlotte Flagler Indian River *Martin Taylor	Clay Gadsden	Charlotte Indian River *Martin	Clay Seminole	Charlotte Indian River Taylor
Low	Clay Gadsden Seminole		Gadsden	Glades		Flagler Glades Taylor	Gadsden	Flagler Glades *Martin

Note: The asterisk denotes a district gaining or losing one hundred dollars or more per pupil. For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

Allocations increased by Model 1 did not appear to follow urban-rural lines; however, no urban districts received less funds under Model 1.

In summary, Model 1 appeared to favor districts with low property wealth and high average daily membership. Only one district, Martin County, received a decrease in allocation of more than one hundred dollars; no district received a similar increase.

Model 2 (R1 R3 P2 P1)

Table 19 depicts the characteristics of Model 2. In this model all districts gaining funds were in the low property wealth grouping (less than, or equal to, $20,000 per pupil) and none of the districts losing funds under this allocation model belonged to this group. One district, Martin County, having an assessed valuation per pupil of more than $40,001, received a predicted allocation of more than one hundred dollars less than the actual 1972-73 expenditure.

Although three districts receiving increased allocations had a per capita income of between $2,001 and $4,000, all other districts gaining funds had a per capita income of $2,000 or less. None of the districts with reduced allocations were in this low income group.

With the exception of Okaloosa County and Clay County, the districts gaining revenue per pupil had fewer than 5,000 pupils in average daily membership. Each of the districts receiving less funds had more than 5,001 pupils.

The majority of districts gaining resources under Model 2 were classified as rural; only two of the ten districts were classified as urbanized rural. The nature of the districts losing funds relative

TABLE 19

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 2 (R1 R3 P2 P1)

Ranking	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Charlotte Dade *Martin Palm Beach		Dade Palm Beach	Okaloosa	Dade Palm Beach		Dade Palm Beach
Medium		Indian River St. Johns	Clay Okaloosa Wakulla	Charlotte *Martin Indian River St. Johns	Clay	Charlotte *Martin Indian River St. Johns	Clay Okaloosa	Charlotte Indian River Monroe
Low	Baker Clay Gadsden Jefferson Liberty Madison Okaloosa Sumter Union Wakulla Washington		Baker Gadsden Jefferson Liberty Madison Sumter Union Washington		Baker Gadsden Jefferson Liberty Madison Sumter Union Wakulla Washington		Baker Gadsden Jefferson Liberty Madison Sumter Union Wakulla Washington	St. Johns *Martin

Note: The asterisk denotes a district gaining or losing one hundred dollars or more per pupil. For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

to 1972-73 was not as clear-cut, however. Two of these districts were urban, one was rural, and three were urbanized rural.

Model 3 (R1 R3 P2 S1 S2 S3)

Characteristics of the districts affected by Model 3 are described in Table 20. Of the ten districts receiving additional funds per pupil equal to, or in excess of, fifty dollars under this model, all but two had an assessed valuation per pupil of less than $20,000. The two exceptions, Pasco County and Pinellas County, had property values per pupil in the $20,001 to $40,000 range.

Under Model 3 increases were predicted for districts falling in all income categories. On the other hand, decreases were predicted only for districts having a per capita income of less than $4,001.

All of the districts receiving allocation decreases had fewer than 12,000 students in average daily membership. Districts receiving increased revenues, however, were of all sizes.

Five of the districts whose predicted allocation levels were greater than those of 1972-73 were rural, three were urbanized rural, and two were urban districts. None of the districts losing funds were urban districts.

Urban districts low in property wealth tended to be favored in the application of Model 3. Pasco County and Pinellas County received increases of more than one hundred dollars per pupil with this funding model.

Model 4 (R1 R3 P2 S2 S3 R2 P1)

Table 21 contains the outline of characteristics of districts affected by Model 4. In terms of property wealth per pupil, this

TABLE 20

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 3 (R1 R3 P2 S1 S2 S3)

	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
Ranking	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Flagler Glades Martin	Brevard Pinellas		Brevard Okaloosa Pinellas Seminole		Brevard Pinellas	
Medium	*Pasco Pinellas	DeSoto Indian River	*Clay Okaloosa Okeechobee *Pasco Seminole	Flagler Indian River Martin	*Clay *Pasco	Indian River Martin	*Clay Okaloosa Seminole	DeSoto Indian River
Low	Brevard *Clay Gadsden Holmes Madison Okaloosa Okeechobee Seminole	Hamilton Washington	Gadsden Holmes Madison	DeSoto Glades Hamilton Washington	Gadsden Holmes Madison Okeechobee	DeSoto Flagler Glades Hamilton Washington	Gadsden Holmes Madison Okeechobee *Pasco	Flagler Glades Hamilton Martin Washington

Note: The asterisk denotes a district gaining or losing one hundred dollars or more per pupil. For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

TABLE 21

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 4 (R1 R3 P2 S2 S3 P1)

	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
Ranking	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Collier *Dade Martin Monroe *Palm Beach		Collier *Dade *Palm Beach	Okaloosa	*Dade *Palm Beach		*Dade *Palm Beach
Medium	Okeechobee *Pasco	Indian River Marion St. Johns Santa Rosa	*Clay Okaloosa Okeechobee *Pasco	Indian River Marion *Martin Monroe St. Johns Santa Rosa	*Clay Gadsden *Pasco	Collier Indian River Marion *Martin Monroe St. Johns Santa Rosa	*Clay Okaloosa Seminole	Collier Indian River Monroe
Low	Baker *Clay Gadsden Gilchrist Holmes Jefferson Madison Okaloosa Seminole Sumter Union *Wakulla	Hamilton Washington	Baker Gadsden Gilchrist Holmes Jefferson Madison Sumter Union *Wakulla	Hamilton Washington	Baker Gilchrist Holmes Jefferson Madison Okeechobee Sumter Union *Wakulla	Hamilton Washington	Baker Gadsden Gilchrist Holmes Jefferson Madison Okeechobee *Pasco Sumter Union *Wakulla	Hamilton Marion *Martin St. Johns Santa Rosa Washington

Note: The asterisk denotes a district gaining or losing one hundred dollars or more per pupil. For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

model predicted increased funds for fourteen districts, twelve of which had property values of less than $20,000 per pupil. Three districts received more than one hundred dollars in additional funds per pupil. Five property-rich districts lost funds; three of these districts lost more than one hundred dollars per pupil. Two districts low in property wealth, Hamilton County and Washington County, received less funds.

A similar pattern existed in terms of per capita income with respect to districts gaining revenues. Low income districts, defined as having less than $2,000 per capita, received increased funding. Districts losing funds were spread across the entire range of income groups.

No clear-cut pattern was discernible for the dimension indexing the size of school districts. Most of the districts gaining funds were small; however, one large school district, Okaloosa County, was also in this group. Two districts with memberships of over 25,001 pupils and nine districts with memberships of between 12,001 and 25,000 pupils received decreased allocations.

No urban district received an increased allocation; the allocations of Dade County and Palm Beach County were cut by one hundred dollars or more per pupil. Although the districts gaining money were primarily rural, over half of the districts losing support were also rural.

Model 4, in summary, had its greatest impact in directing funds from urban, high wealth districts to rural, low wealth districts. Six of the twenty-five districts had changes in allocation levels of more than one hundred dollars per pupil.

Model 5 (R1 P1 S1)

District characteristics for Model 5 are presented in Table 22. With reference to property wealth, none of the districts whose predicted allocations exceeded actual 1972-73 expenditures had property values of more than $40,001 per pupil. Half of the districts whose allocations were decreased did belong to this classification. Two of these districts, Glades County and Martin County, would receive decreased allocations of one hundred or more dollars per pupil.

There was no discernible pattern in the type of district either receiving increased or decreased allocations in terms of income per capita. In each case affected districts belonged to the entire range of categories.

A similar lack of differentiation existed for districts classified by size. The allocations for large districts and small districts were increased and decreased by Model 5.

In terms of an urban-rural classification, no clear-cut pattern was found for the effect of Model 5 on districts. Urban areas, urbanized rural districts, and rural areas gained resources and lost resources.

Model 5 appeared to supplement districts of low wealth, however, the nature of the model caused a variety of district needs to be considered in the prediction process. Consequently, affected districts were difficult to categorize along the discussed dimensions. The allocation per pupil for Clay County was increased by more than one hundred dollars.

TABLE 22

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 5 (R1 S1 P1)

	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
Ranking	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Dade Flagler *Glades *Martin	Brevard	Dade	Brevard Seminole	Dade	Brevard	Dade
Medium	Alachua Bay Pasco	DeSoto St. Johns	Alachua Bay *Clay Pasco Seminole	Flagler *Martin St. Johns	Alachua Bay *Clay Pasco	*Martin St. Johns	Alachua Bay *Clay Seminole	DeSoto
Low	Baker Brevard *Clay Gadsden Jefferson Madison Seminole Sumter Union	Hamilton *Washington	Baker Gadsden Jefferson Madison Sumter Union Wakulla	DeSoto *Glades Hamilton *Washington	Baker Gadsden Jefferson Madison Sumter Union Wakulla	DeSoto Flagler *Glades Hamilton *Washington	Baker Gadsden Jefferson Madison Pasco Sumter Union Wakulla	Flagler *Glades Hamilton *Martin St. Johns *Washington

Note: The asterisk denotes a district gaining or losing one hundred dollars or more per pupil. For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

Model 6 (R1 R3 P2 S1)

The descriptions of districts whose allocations were changed by Model 6 are supplied in Table 23. Assessed property valuation per pupil appeared to be a distinguishing factor for districts receiving increased allocations. Five districts with property values of more than $40,001 per pupil received reduced allocations, two of which were cuts of more than one hundred dollars. Liberty County and Washington County, with values of less than $20,000 per pupil, also received decreased allotments.

In terms of per capita income, Model 6 increased the allocations of six districts with incomes of $2,001 per capita or more and reduced the allocations of eight districts with incomes lower than $4,001 per capita. Thus, the high income areas were not adversely affected by Model 6.

Following a similar pattern, three large school districts received increased allocations in addition to three districts having from 5,001 to 12,000 pupils. No districts with more than 100,001 pupils received less money per pupil, while the allocations of five districts with fewer than 2,000 students were cut.

Model 6 did not decrease the allocation of any urban area by fifty or more dollars per pupil. Two urban areas, Pinellas County and Brevard County, received increases at this level. No pattern was determined for rural and urbanized rural districts.

In summary, Model 6 appeared to be oriented toward increasing the per pupil allocations of low property wealth districts with large numbers of students. Small, rich district received decreased allocations.

TABLE 23

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 6 (R1 R3 P2 S1)

	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
Ranking	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Charlotte Flagler *Glades *Martin Monroe	Brevard Pinellas		Brevard Okaloosa Pinellas		Brevard Pinellas	
Medium	Citrus Pasco Pinellas	Taylor	Citrus Clay Okalossa Pasco	Charlotte Flagler *Martin Monroe Taylor	Citrus Clay Pasco	Charlotte *Martin Monroe	Clay Okaloosa	Charlotte Monroe Taylor
Low	Brevard Clay Okaloosa	Liberty Washington		*Glades Liberty Washington		Flagler *Glades Liberty Taylor Washington	Citrus Pasco	Flagler *Glades *Martin

Note: The asterisk denotes a district gaining or losing one hundred dollars or more per pupil. For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

Model 7 (Weighted S1 R1 R3 P2)

Table 24 presents the characteristics of districts receiving changes in per pupil allocation of fifty dollars or more under Model 7. In terms of property wealth, three districts having property wealth of less than $40,001 per pupil received increased funds. Decreased allocations for seven affected districts spanned the range of wealth.

Two of the three districts receiving increased allocations had per capita incomes of more than $4,001. The districts whose allocations were decreased, on the other hand, all had per capita incomes of less than $4,001.

Two of the three districts receiving more funds had more than 25,001 pupils in average daily membership. The small districts affected by Model 7 all received reduced allocations.

Similarly, districts receiving reduced funding per pupil were predominantly rural, while Pinellas County and Brevard County received increased allocations. The exception was Gadsden County, a rural district which received increased funds.

Model 7 tended to predict increased allocations for large, urban districts with low property wealth. No district in this model either gained or lost funds in excess of one hundred dollars per pupil.

Model 8 (Weighted P1 R1 R3 P2)

In Table 25 the descriptions of districts whose funding was changed by more than fifty dollars per pupil are detailed. Only three districts received increased allocations under this model, and all of these had property values per pupil of less than $40,001. The districts losing funds, however, spanned the range of wealth in terms of property value.

TABLE 24

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 7 (WEIGHTED S1 R1 R3 P2)

	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
Ranking	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Martin	Brevard Pinellas		Brevard Pinellas		Brevard Pinellas	
Medium	Pinellas	Hendry Hernando Levy		Hendry Hernando Martin		Hernando Martin		
Low	Brevard Gadsden	Holmes Union Washington	Gadsden	Holmes Levy Union Washington		Hendry Holmes Levy Union Washington	Gadsden	Hendry Hernando Holmes Levy Martin Union Washington

Note: For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

TABLE 25

CHARACTERISTICS OF DISTRICTS WHOSE ALLOCATIONS WERE CHANGED BY MODEL 8 (WEIGHTED P1 R1 R3 P2)

	Characteristics							
	Property Wealth		Income Per Capita		Average Daily Membership		Population Density	
Ranking	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
High		Charlotte Martin	Brevard		Brevard		Brevard	
Medium	Pasco	Hendry Hernando Levy Taylor	Pasco	Charlotte Hendry Hernando Martin Taylor	Gadsden Pasco	Charlotte Hernando Martin		Charlotte Taylor
Low	Brevard Gadsden	Glades Washington	Gadsden	Glades Levy Washington		Glades Hendry Levy Taylor Washington	Gadsden Pasco	Glades Hendry Hernando Levy Martin Washington

Note: For the classification of districts within each characteristic, see Appendices 8 to 11. These classification categories were collapsed for the purposes of Tables 18 to 25. Low property wealth included values of less than $20,001 per pupil, medium wealth ranged from $20,001 to $40,000, and high wealth included those values over $40,001. Low income was defined as less than $2,001 per capita; medium income ranged from $2,001 to $4,000; per capita incomes of $4,001 or more were defined as high. Less than 5,001 pupils in average daily membership was defined as low, medium was from 5,001 to 25,000, and high was over 25,001. Urban districts were classified as high population density districts, urbanized rural as medium density, and rural as low density.

With reference to income per capita, no pattern was determined for districts gaining funds; all of the districts losing money, however, had per capita incomes of less than $4,001.

Larger districts tended to receive larger allocations under Model 8, and the allocations for all of the smaller districts affected were cut. The districts having from 5,001 to 12,000 pupils in average daily membership were affected in both directions.

One urban area, Brevard County, and two rural districts, Gadsden County and Pasco County, received increased funds. No urban area received a reduction under this model.

In summary, Model 8 appeared to restrict the funding of small, rural districts. No district allocation was changed by one hundred or more dollars per pupil.

Summary

Of the eight models developed in this study there were three distinct differences in construction. First, four variations of a base model were developed (Models 1, 2, 3, 4, and 6). A second group of two additional models, Model 7 (Weighted S1 R1 R3 P2) and Model 8 (Weighted P1 R1 R3 P2), used a variation of the base model with a manipulated weighting of one factor. Third, Model 5 was formed using the strongest factors in each subgroup.

The impact of the models was quite varied. In terms of directing more funds to small, rural districts, Model 4 (R1 R3 P2 S2 S3 R2 P1) and Model 2 (R1 R3 P2 P1) appeared to be most efficient. Models 1 (R1 R3 P2), 3 (R1 R3 P2 S1 S2 S3), 7 (Weighted S1 R1 R3 P2), and 8 (Weighted P1 R1 R3 P2) tended to channel funds towards large, urban

districts with low wealth. Model 5 (R1 P1 S1) performed somewhat independently of the criteria considered in this chapter.

CHAPTER V

SUMMARY

In view of sociological and technical developments since World War II, consideration must now be given to the design, field testing, and implementation of comprehensive state school support distribution mechanisms that recognize the wide variations in educational need existing among school districts. Measured in terms of socioeconomic, resource utilization, and programmatic characteristics, educational needs of school districts can be adequately supported through a state school support program that accommodates educational goals and priorities and capitalizes on recent advances in data analysis and dat handling techniques.

Purpose of the Study

The purpose of this study was to develop a state school support technique capable of recognizing the variety of socioeconomic characteristics, school resource utilization patterns, and programmatic responsibilities among the school districts in a state, and capable of allocating funds to districts with certain characteristics according to state goals.

Procedures

Four phases of activity were involved in accomplishing this purpose. First, variables were selected for Florida and grouped into

the appropriate socioeconomic, school resource utilization, or programmatic category. Second, principal component analysis was used to reduce the large number of variables to a small set of factors that reflected the independent dimensions of the socioeconomic, resource utilization, and programmatic subgroups. Factor scores were calculated for these factors in the third step. In the fourth phase, the factors were used to design a set of funding models. Five of the models selected were based on a primary set of variables that explained the greatest amount of variance in the data set. Another model used the strongest factor of each of the three subgroups, and two additional models reflected public policy decisions to weight one variable in the prediction equation. The factor scores for each district were then used in regression equations to predict allocations based on actual 1972-73 per pupil expenditures in the sixty-seven county-based school districts in Florida for each of the eight models.

Findings

The findings of this study may be divided into those relating to the analytical process and those indicating the results of the application of the formulated funding models. A reflective view of the procedures of the study indicated the following:

1. Sufficient variables for accomplishment of the study were available from standard reporting procedures of the Florida Department of Education and the U.S. Bureau of the Census.
2. Independent factors in each subgroup could be identified that accounted for between 15 and 41 percent of the variance in the data set.

3. Funding models were designed that had different effects on districts with different characteristics.
4. The changes in local district funding level per pupil predicted by the models ranged between plus and minus two hundred dollars.

In terms of specific results of the application of particular funding models, the following major effects were observed. Only increases or decreases of fifty dollars or more per pupil are considered in these statements unless otherwise noted.

1. Model 2 (R1 R3 P2 P1) and Model 4 (R1 R3 P2 S2 S3 R2 P1) tended to predict allocations in excess of actual per pupil expenditures for 1972-73 for small, rural school districts.
2. Model 1 (R1 R3 P2), Model 3 (R1 R3 P2 S1 S2 S3), Model 7 (Weighted S1 R1 R3 P2), and Model 8 (Weighted P1 R1 R3 P2) increased the per pupil allocations for large and/or urban districts with low wealth, measured in terms of assessed valuation per pupil and per capita income.
3. In terms of property wealth per pupil, the models tended to predict increased allocations for districts having an amount equal to, or less than, $20,000 per pupil. Similarly, the models tended to decrease the allocations of districts with a property wealth of equal to, or greater than, $40,001 per pupil. Models 2 (R1 R3 P2 P1), 3 (R1 R3 P2 S1 S2 S3), 4 (R1 R3 P2 S2 S3 R2 P1), and 5 (R1 P1 S1) appeared to predict more increases in allocations than decreases for districts having property wealth in the $20,001 to $40,000 per pupil range.

4. Although application of the models resulted in few increased allocations for districts whose per capita income equaled, or was greater than, $4,001, allocations for districts in this income category were not substantially decreased. Models 2 (R1 R3 P2 P1), 4 (R1 R3 P2 S2 S3 R2 P1), and 5 (R1 P1 S1) tended to predict increased allocations for districts having a per capita income of $2,000 or less.

5. Model 2 (R1 R3 P2 P1) and Model 5 (R1 P1 S1) were found to give increased allocations to districts with 2,000 pupils or fewer in average daily membership. Districts in the 2,001 to 25,000 range were most affected by the models, but no patterns of impact were detected. Few decreases were predicted for districts with 25,001 or more pupils in average daily membership.

6. The urban impact of the models was very limited. Models 3 (R1 R3 P2 S1 S2 S3), 6 (R1 R3 P2 S1), and 7 (Weighted S1 R1 R3 P2) tended to channel increased funds to urban areas. Only Model 3 (R1 R3 P2 S1 S2 S3) and Model 5 (R1 P1 S1) predicted a greater number of increases than decreases for districts classified as urbanized rural. Rural districts appeared to be favored by Models 2 (R1 R3 P2 P1), 4 (R1 R3 P2 S2 S3 R2 P1), and 5 (R1 P1 S1).

7. Model 2 (R1 R3 P2 P1), Model 4 (R1 R3 P2 S2 S3 R2 P1), and Model 5 (R1 P1 S1) predicted increased allocations for districts in the fourth, or lowest, achievement quartile, while Model 3 (R1 R3 P2 S1 S2 S3) was the only model that gave more increases than decreases to districts in the first quartile.

8. Models 1 (R1 R3 P2), 6 (R1 R3 P2 S1), 7 (Weighted S1 R1 R3 P2), and 8 (Weighted P1 R1 R3 P2) tended to predict a greater proportion of increases equal to, or less than, forty-nine dollars per pupil in average daily membership. Approximately one-third of the increases predicted by Models 2 (R1 R3 P2 P1), 3 (R1 R3 P2 S1 S2 S3), 4 (R1 R3 P2 S2 S3 R2 P1), and 5 (R1 P1 S1) were equal to, or greater than, fifty dollars per pupil. No pattern was observed for predicted allocation decreases.

Conclusions

This study suggested that a comprehensive state funding technique incorporating a variety of socioeconomic, resource utilization, and programmatic characteristics can be developed. Furthermore, by predicting the level of funding off of the actual expenditures of a previous year, redistribution of funds could be achieved without destroying the financial base of the local school systems.

The application of a funding program similar to that developed in this study would not produce the level of change indicated in the data analysis year after year. The most drastic changes would occur, of course, in the first year of implementation. Thereafter, the difference between the predicted allotment and the actual expenditure of the previous year would vary according to changes in the input for the variables making up the factors used in the models throughout the entire state school system. As a result of this type of prediction technique, local school districts could be encouraged to provide optimal educational services at minimal costs.

Recommendations for Further Study

The governmental structure for schools in a state necessarily affects the range of phenomena that may be quantified for use in statistical studies. Data for Florida lacked the degree of variation that will be found in many other states because the relatively large county political subdivisions of the state are also used for school districts. Consequently, future applications of the developed technique should not assume that the variables included in the factors in each subgroup in this study will be useful.

A large study utilizing data from several states would help clarify relationships among data and aid in the development of a more generalizable model. Furthermore, such an analysis would aid in state adoption of the developed funding technique by providing additional validity to the process.

APPENDICES

APPENDIX 1

DISTRICT IDENTIFICATION NUMBERS

Number	District Name
1	Alachua
2	Baker
3	Bay
4	Bradford
5	Brevard
6	Broward
7	Calhoun
8	Charlotte
9	Citrus
10	Clay
11	Collier
12	Columbia
13	Dade
14	DeSoto
15	Dixie
16	Duval
17	Escambia
18	Flagler
19	Franklin
20	Gadsden
21	Gilchrist
22	Glades
23	Gulf
24	Hamilton
25	Hardee
26	Hendry
27	Hernando
28	Highlands
29	Hillsborough
30	Holmes
31	Indian River
32	Jackson
33	Jefferson
34	Lafayette
35	Lake
36	Lee
37	Leon
38	Levy

APPENDIX 1 (Continued)

Number	District Name
39	Liberty
40	Madison
41	Manatee
42	Marion
43	Martin
44	Monroe
45	Nassau
46	Okaloosa
47	Okeechobee
48	Orange
49	Osceola
50	Palm Beach
51	Pasco
52	Pinellas
53	Polk
54	Putnam
55	St. Johns
56	St. Lucie
57	Santa Rosa
58	Sarasota
59	Seminole
60	Sumter
61	Suwannee
62	Taylor
63	Union
64	Volusia
65	Wakulla
66	Walton
67	Washington

APPENDIX 2

PART A

SOCIOECONOMIC VARIABLES

Variable Number	Variable Name and Source
VAR002	Average Daily Membership K-12, 1972-73 Source: *Report of the Commissioner of Education of Pupil, Personnel and Financial Data for the Fiscal Year Beginning July 1, 1972 and Ending June 30, 1973*, pp. 10-11.
VAR003	Unadjusted Cost of Living Factors, 1973-74 Source: Florida Education Finance Act, 1973.
VAR006	Yield Per Nonvoted Mill Per Student in Average Daily Membership, 1972-73 Source: *Report of the Commissioner*, pp. 84-85.
VAR007	Wealth Per Pupil in Average Daily Membership, 1972-73, Rounded to Nearest Dollar Source: *Report of the Commissioner*, pp. 84-85.
VAR008	Total Number of Schools, 1972-73 Source: *Report of the Commissioner*, pp. 14-15.
VAR009	Male Teachers as a Percent of Total Teachers, 1972-73 Source: *Report of the Commissioner*, pp. 12-13.
VAR010	Population Per Square Mile, 1970 Source: 1970 Census.
VAR011	Nonwhite Population, 1970 Source: 1970 Census.
VAR012	Total Population, 1970 Source: 1970 Census.
VAR013	Nonwhite Population as a Percent of Total Population, 1970 Source: 1970 Census.

APPENDIX 2, PART A (Continued)

Variable Number	Variable Name and Source
VAR016	Number of Referrals to Juvenile Courts, 1972-73 Source: Florida Department of Health and Rehabilitative Services.
VAR017	Population Ages 5-17, 1970 Source: 1970 Census
VAR018	Referrals to Juvenile Courts 1972-73 as a Percent of the Population Ages 5-17, 1970 Source: Calculated from VAR016 and VAR017.
VAR019	Referrals to Juvenile Courts as a Percent of Average Daily Membership Grades K-12, 1972-73 Source: Calculated from VAR002 and VAR016.
VAR032	Percent of Pupils Who Were American Indian, Black, Asian American, or Spanish American, Fall 1973 Source: Research Report Number 110, *Pupils by Race/Ethnic Group; Staff by Sex and Race/Ethnic Group*, Revised, Florida Department of Education, May 1974, Table 5.
VAR033	American Indian, Black, Asian American, or Spanish American Students Expelled as a Percent of Total Students Expelled, 1972-73 Source: Research Report Number 110, Table 4.
VAR037	Percent Population Under 18 Years of Age, 1970 Source: Research Report Number 106, *Population Characteristics of Florida School Districts*, Florida Department of Education, September 1974, p. 19.
VAR038	Percent Population 65 Years of Age and Over, 1970 Source: Research Report Number 106, p. 19.
VAR039	Median Years of School Completed, 1970 Source: Research Report Number 106, p. 25.
VAR040	Illegitimate Live Births as a Percent of Total Live Births Source: Research Report Number 106, p. 35.

APPENDIX 2, PART A (Continued)

Variable Number	Variable Name and Source
VAR041	Persons Unemployed as a Percent of Total Civilian Work Force, March 1972 Source: Research Report Number 106, p. 43.
VAR042	Personal Income Per Capita, 1970 Source: Research Report Number 106, p. 51.
VAR043	Percent Increase in Housing Units, 1960-70 Source: Research Report Number 106, p. 53.
VAR044	Juvenile Arrests Ages 14-17 as a Percent of Total Juvenile Arrests, 1971 Source: Research Report Number 106, p. 59.
VAR045	Total Arrest Rate Per 1,000 Population, 1972 Source: Research Report Number 106, p. 59.
VAR046	Percent of Total State Average Daily Membership, 1972-73 Source: *Report of the Commissioner*, pp. 10-11.
VAR177	Number of Pupils Eligible for Title I Source: Florida Department of Education
VAR178	Number of Students from Low Income Families Source: Florida Department of Education
VAR179	Number of Students from Families Receiving Aid to Families with Dependent Children Source: Florida Department of Education
VAR180	Number of Children in Foster Homes Source: Florida Department of Education
VAR181	Change in Population, 1960-70 Source: 1970 Census
VAR182	Title I Eligibles as a Percent of Average Daily Membership Source: Calculated from VAR002 and VAR177.

APPENDIX 2

PART B

RESOURCE UTILIZATION VARIABLES

Variable Number	Variable Name and Source
VAR001	Average Total Dollars Available Per Student, 1972-73, Rounded to Nearest Dollar Source: Florida Department of Education
VAR004	State Dollars as a Percent of Average Total Dollars Available Per Student, 1972-73 Source: Florida Department of Education
VAR014	Total Instructional Personnel, 1972-73 Source: *Report of the Commissioner of Education of Pupil, Personnel and Financial Data for the Fiscal Year Beginning July 1, 1972 and Ending June 30, 1973*, pp. 12-13.
VAR015	Teachers as a Percent of Total Instructional Personnel, 1972-73 Source: *Report of the Commissioner*, pp. 12-13.
VAR020	Total Expenditures for Instruction, 1972-73, Rounded to Nearest Dollar Source: *Report of the Commissioner*, pp. 46-47.
VAR021	Male Teachers, Grades K-6, as a Percent of Total Teachers of Grades K-6, 1972-73 Source: Calculated from data in the *Report of the Commissioner*, pp. 12-13.
VAR022	Teachers's Salaries as a Percent of Total Expenditures for Instruction, 1972-73 Source: Calculated from data in the *Report of the Commissioner*, pp. 50-51, 54-55.
VAR023	Salaries of Teachers as a Percent of Total Current Expenses, 1972-73 Source: Calculated from data in the *Report of the Commissioner*, pp. 46-47.

APPENDIX 2, PART B (Continued)

Variable Number	Variable Name and Source
VAR024	Expenditures for Health Services as a Percent of Total Current Expenses, 1972-73 Source: Calculated from data in the *Report of the Commissioner*, pp. 54-55.
VAR025	Expenditures for School Libraries, Material Centers, and Teaching Materials as a Percent of Total Current Expenses, 1972-73 Source: Calculated from data in the *Report of the Commissioner*, pp. 52-53.
VAR026	Pupil-Teacher Ratio, Grades K-12, 1972-73 Source: *Report of the Commissioner*, pp. 10-11, 12-13.
VAR027	Pupil-Instructional Personnel Ratio, Grades K-12, 1972-73 Source: *Report of the Commissioner*, pp. 10-11, 12-13.
VAR028	Pupil-Teacher Ratio, Grades 1-6, 1972-73 Source: *Principals's Annual Report on Attendance*, Research Brief 61, Florida Department of Education, p. 3.
VAR029	Pupil-Teacher Ratio, Grades 7-12, 1972-73 Source: *Principals's Annual Report on Attendance*, Research Brief 61, Florida Department of Education, p. 3.
VAR030	Existing Need for Capital Outlay in Sqaure Feet Required Per Pupil in Average Daily Membership, 1972-73 Source: Florida Department of Education
VAR034	Instructional Personnel Who Were American Indian, Black, Asian American, or Spanish American as a Percent of Total Instructional Personnel, 1973-74 Source: Research Report Number 110, *Pupils by Race/Ethnic Group; Staff by Sex and Race/Ethnic Group*, Revised, Florida Department of Education, May 1974, Table 5.
VAR035	Clerks, Aides, Secretaries, and Technicians as a Percent of Total District Staff, 1972-73 Source: Research Report Number 110, Tables 6 and 7.

APPENDIX 2, PART B (Continued)

Variable Number	Variable Name and Source
VAR047	Rank I (Doctorate) Annual Contract Personnel as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR048	Rank I (Doctorate) Continuing Contract Personnel with Less than Seven Years of Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR049	Rank I (Doctorate) Continuing Contract Personnel with Seven or More Years of Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education
VAR050	Rank IA (Sixth Year College) Annual Contract Personnel as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR051	Rank IA (Sixth Year College) Continuing Contract Personnel with Less than Seven Years of Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR052	Rank IA (Sixth Year College) Continuing Contract Personnel with Seven or More Years of Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR053	Rank II (M.A.) Annual Contract Personnel as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR054	Rank II (M.A.) Continuing Contract Personnel with Less than Seven Years of Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.

APPENDIX 2, PART B (Continued)

Variable Number	Variable Name and Source
VAR055	Rank II (M.A.) Continuing Contract Personnel with Seven or More Years Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR056	Rank III (B.A.) Annual Contract Personnel as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR057	Rank III (B.A.) Continuing Contract Personnel with Less than Seven Years of Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR058	Rank III (B.A.) Continuing Contract Personnel with Seven or More Years of Experience as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR059	Instructional Personnel with Ranks IV, V, and VI (No B.A.) as a Percent of Total Instructional Personnel, March 1973 Source: Florida Department of Education.
VAR060	Expenditures for Transportation (Auxiliary Services and Contracted Program Funds) as a Percent of Total Current Expenditures, 1972-73 Source: *Report of the Commissioner*, pp. 54-55, 70-71.
VAR061	Expenditures for Auxiliary Services as a Percent of Total Current Expenses, 1972-73 Source: *Report of the Commissioner*, pp. 54-55.
VAR062	Total Expenditures for Instruction as a Percent of Total Current Expenses, 1972-73 Source: Calculated from data in the *Report of the Commissioner*, pp. 52-55.
VAR063	Expenditures for Attendance Services as a Percent of Expenditures for Auxiliary Services, 1972-73 Source: Calculated from data in the *Report of the Commissioner*, pp. 54-55.

APPENDIX 2, PART B (Continued)

Variable Number	Variable Name and Source
VAR064	Average Annual Instructional Salary, 1972-73 Source: *Report of the Commissioner*, pp. 80-81.
VAR065	Total Expenditures for Auxiliary Services, 1972-73 Source: *Report of the Commissioner*, pp. 54-55.
VAR066	Expenditures for Attendance Services as a Percent of Total Current Expenses, 1972-73 Source: *Report of the Commissioner*, pp. 54-55.
VAR201	Percent Rank I (Doctorate) Instructional Personnel Source: Calculated from VAR047 through VAR059.
VAR202	Percent Rank IA (Sixth Year College) Instructional Personnel Source: Calculated from VAR047 through VAR059.
VAR203	Percent Rank II (M.A.) Instructional Personnel Source: Calculated from VAR047 through VAR059.
VAR204	Percent Rank III (B.A.) Instructional Personnel Source: Calculated from VAR047 through VAR059.
VAR205	Percent of Instructional Personnel with Annual Contracts, March 1973 Source: Calculated from VAR047 through VAR059.
VAR206	Percent of Instructional Personnel with Continuing Contracts and Less than Seven Years of Experience, March 1973 Source: Calculated from VAR047 through VAR059.
VAR207	Percent Instructional Personnel with Continuing Contracts and Seven or More Years of Experience, March 1973 Source: Calculated from VAR047 through VAR059.

APPENDIX 2

PART C

PROGRAMMATIC VARIABLES

Variable Number	Variable Name and Source
VAR005	Percent of Total K-12 Membership at Close of Year Nonpromoted, 1972-73 Source: *Report of the Commissioner*, pp. 10-11.
VAR031	Change in Membership from First Month to Ninth Month, Grades 10-12, 1972-73 Source: Research Report Number 108, *Analysis of Membership, Promotion and Nonpromotion: Florida Public Schools 1972-73*, Florida Department of Education, November 1974, Table 3.
VAR036	Percent of Graduates in 1973 Who Did Not Immediately Continue Their Education in Junior Colleges, Universities, Trade, Technical or Other Educational Institutions Source: Research Report Number 104, *Florida High School Graduates 1973*, Florida Department of Education, April 1974, Table 4.
VAR067	FTE Educable Mentally Retarded, 1973-74 Source: Florida Department of Education.
VAR068	FTE Trainable Mentally Retarded, 1973-74 Source: Florida Department of Education.
VAR069	FTE Physically Handicapped, 1973-74 Source: Florida Department of Education.
VAR070	FTE Physical and Occupational Therapy I, 1973-74 Source: Florida Department of Education.
VAR071	FTE Speech Therapy I, 1973-74 Source: Florida Department of Education

APPENDIX 2, PART C (Continued)

Variable Number	Variable Name and Source
VAR072	FTE Deaf, 1973-74 Source: Florida Department of Education.
VAR073	FTE Visually Handicapped I, 1973-74 Source: Florida Department of Education.
VAR074	FTE Visually Handicapped, 1973-74 Source: Florida Department of Education.
VAR075	FTE Emotionally Disturbed I, 1973-74 Source: Florida Department of Education.
VAR076	FTE Emotionally Disturbed, 1973-74 Source: Florida Department of Education.
VAR077	FTE Socially Maladjusted, 1973-74 Source: Florida Department of Education.
VAR078	FTE Specific Learning Disability I, 1973-74 Source: Florida Department of Education.
VAR079	FTE Specific Learning Disability, 1973-74 Source: Florida Department of Education.
VAR080	FTE Gifted I, 1973-74 Source: Florida Department of Education.
VAR081	FTE Hospital and Homebound I, 1973-74 Source: Florida Department of Education.
VAR082	FTE Vocational Education I, 1973-74 Source: Florida Department of Education.
VAR083	FTE Vocational Education II, 1973-74 Source: Florida Department of Education.
VAR084	FTE Vocational Education III, 1973-74 Source: Florida Department of Education.
VAR085	FTE Vocational Education IV, 1973-74 Source: Florida Department of Education.
VAR086	FTE Vocational Education V, 1973-74 Source: Florida Department of Education.

APPENDIX 2, PART C (Continued)

Variable Number	Variable Name and Source
VAR087	FTE Vocational Education VI, 1973-74 Source: Florida Department of Education.
VAR088	FTE Adult Basic Education and Adult High School, 1973-74 Source: Florida Department of Education.
VAR089	FTE Community Service Source: Florida Department of Education.
VAR090	Total FTE Kindergarten-Grade 3, 1973-74 Source: Florida Department of Education.
VAR091	Total FTE Grades 4-10, 1973-74 Source: Florida Department of Education.
VAR092	Total FTE Grades 11 and 12, 1973-74 Source: Florida Department of Education.
VAR093	Total FTE, 1973-74 Source: Florida Department of Education.
VAR094	Total FTE Vocational Education, 1973-74 Source: Calculated.
VAR095	WFTE Educable Mentally Retarded, 1973-74 Source: Calculated.
VAR096	WFTE Trainable Mentally Retarded, 1973-74 Source: Calculated.
VAR097	WFTE Physically Handicapped, 1973-74 Source: Calculated.
VAR098	WFTE Physical and Occupational Therapy I, 1973-74 Source: Calculated.
VAR099	WFTE Speech Therapy I, 1973-74 Source: Calculated.
VAR100	WFTE Deaf, 1973-74 Source: Calculated.
VAR101	WFTE Visually Handicapped I, 1973-74 Source: Calculated.

APPENDIX 2, PART C (Continued)

Variable Number	Variable Name and Source
VAR102	WFTE Visually Handicapped, 1973-74 Source: Calculated.
VAR103	WFTE Emotionally Disturbed I, 1973-74 Source: Calculated.
VAR104	WFTE Emotionally Disturbed, 1973-74 Source: Calculated.
VAR105	WFTE Socially Maladjusted, 1973-74 Source: Calculated.
VAR106	WFTE Specific Learning Disability I, 1973-74 Source: Calculated.
VAR107	WFTE Specific Learning Disability, 1973-74 Source: Calculated.
VAR108	WFTE Gifted, 1973-74 Source: Calculated.
VAR109	WFTE Hospital and Homebound I, 1973-74 Source: Calculated.
VAR110	WFTE Vocational Education I, 1973-74 Source: Calculated.
VAR111	WFTE Vocational Education II, 1973-74 Source: Calculated.
VAR112	WFTE Vocational Education III, 1973-74 Source: Calculated.
VAR113	WFTE Vocational Education IV, 1973-74 Source: Calculated.
VAR114	WFTE Vocational Education V, 1973-74 Source: Calculated.
VAR115	WFTE Vocational Education VI, 1973-74 Source: Calculated.
VAR116	WFTE Adult Basic Education and Adult High School, 1973-74 Source: Calculated.
VAR117	WFTE Community Service Source: Calculated.

APPENDIX 2, PART C (Calculated)

iable Number	Variable Name and Source
VAR118	Total WFTE Kindergarten-Grade 3, 1973-74 Source: Calculated.
VAR119	Total WFTE Grades 4-10, 1973-74 Source: Calculated.
VAR120	Total WFTE Grades 11 and 12, 1973-74 Source: Calculated.
VAR121	Total WFTE, 1973-74 Source: Calculated.
VAR122	Total WFTE Vocational Education, 1973-74 Source: Calculated.
VAR123	FTE Educable Mentally Retarded as a Percent of Total FTE, 1973-74 Source: Calcualted.
VAR124	FTE Trainable Mentally Retarded as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR125	FTE Physically Handicapped as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR126	FTE Physical and Occupational Therapy I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR127	FTE Speech Therapy I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR128	FTE Deaf as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR129	FTE Visually Handicapped I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR130	FTE Visually Handicapped as a Percent of Total FTE, 1973-74 Source: Calculated.

APPENDIX 2, PART C (Continued)

Variable Number	Variable Name and Source
VAR131	FTE Emotionally Disturbed I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR132	FTE Emotionally Disturbed as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR133	FTE Socially Maladjusted as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR134	FTE Specific Learning Disability I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR135	FTE Specific Learning Disability as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR136	FTE Gifted I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR137	FTE Hospital and Homebound I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR138	FTE Vocational Education I as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR139	FTE Vocational Education II as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR140	FTE Vocational Education III as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR141	FTE Vocational Education IV as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR142	FTE Vocational Education V as a Percent of Total STE, 1973-74 Source: Calculated.

APPENDIX 2, PART C (Continued)

Variable Number	Variable Name and Source
VAR143	FTE Vocational Education VI as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR144	FTE Adult Basic Education and Adult High School as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR145	FTE Community Service as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR146	Total FTE Kindergarten-Grade 3 as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR147	Total FTE Grades 4-10 as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR148	Total FTE Grades 11 and 12 as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR149	Total Vocational Education FTE as a Percent of Total FTE, 1973-74 Source: Calculated.
VAR150	WFTE Educable Mentally Retarded as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR151	WFTE Trainable Mentally Retarded as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR152	WFTE Physically Handicapped as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR153	WFTE Physical and Occupational Therapy I as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR154	WFTE Speech Therapy I as a Percent of Total WFTE, 1973-74 Source: Calculated.

APPENDIX 2, PART C (Calculated)

Variable Number	Variable Name and Source
VAR155	WFTE Deaf as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR156	WFTE Visually Handicapped I as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR157	WFTE Visually Handicapped as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR158	WFTE Emotionally Disturbed I as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR159	WFTE Emotionally Disturbed as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR160	WFTE Socially Maladjusted as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR161	WFTE Specific Learning Disability I as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR162	WFTE Specific Learning Disability as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR163	WFTE Gifted I as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR164	WFTE Hospital and Homebound I as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR165	WFTE Vocational Education I as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR166	WFTE Vocational Education II as a Percent of Total WFTE, 1973-74 Source: Calculated.

APPENDIX 2, PART C (Calculated)

Variable Number	Variable Name and Source
VAR167	WFTE Vocational Education III as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR168	WFTE Vocational Education IV as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR169	WFTE Vocational Education V as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR170	WFTE Vocational Education VI as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR171	WFTE Adult Basic Education and Adult High School as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR172	WFTE Community Service as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR173	Total WFTE Kindergarten-Grade 3 as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR174	Total WFTE Grades 4-10 as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR175	Total WFTE Grades 11 and 12 as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR183	Twelfth Grade Aptitude Raw Score, 1973 Source: Board of University Examiners, University of Florida.
VAR184	Twelfth Grade English Raw Score, 1973 Source: Board of University Examiners, University of Florida.
VAR185	Twelfth Grade Social Studies Raw Score, 1973 Source: Board of University Examiners, University of Florida.

APPENDIX 2, PART C (Calculated)

Variable Number	Variable Name and Source
VAR186	Twelfth Grade Natural Sciences Raw Score, 1973 Source: Board of University Examiners, University of Florida.
VAR187	Twelfth Grade Natural Sciences Raw Score, 1973 Source: Board of University Examiners, University of Florida.
VAR188	Twelfth Grade Total Percentile, 1973 Source: Board of University Examiners, University of Florida.
VAR189	Twelfth Grade Verbal Raw Score, 1973 Source: Board of University Examiners, University of Florida.
VAR190	Twelfth Grade Quantitative Raw Score, 1973 Source: Board of University Examiners, University of Florida.
VAR191	Twelfth Grade Reading Index Raw Score, 1973 Source: Board of University Examiners, University of Florida.
VAR192	Grade 3 Criterion Referenced Math Composite Score, 1972 Source: Florida Department of Education.
VAR193	Grade 3 Criterion Referenced Communications Composite Score, 1972 Source: Florida Department of Education.
VAR194	Grade 3 Criterion Referenced Composite All Subjects, 1972 Source: Florida Department of Education.
VAR195	Grade 6 Criterion Referenced Math Composite Score, 1972 Source: Florida Department of Education.
VAR196	Grade 6 Criterion Referenced Communications Composite Score, 1972 Source: Florida Department of Education.
VAR197	Grade 6 Criterion Referenced Composite All Subjects, 1972 Source: Florida Department of Education.

APPENDIX 2, PART C (Calculated)

Variable Number	Variable Name and Source
VAR198	Grade 9 Criterion Referenced Math Composite Score, 1972 Source: Florida Department of Education.
VAR199	Grade 9 Criterion Referenced Communications Composite Score, 1972 Source: Florida Department of Education.
VAR200	Grade 9 Criterion Referenced Composite All Subjects, 1972 Source: Florida Department of Education.
VAR208	Total Special Education WFTE as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR210	Total ADM as a Percent of Total WFTE, 1973-74 Source: Calculated.
VAR211	Total Vocational Education WFTE as a Percent of Total WFTE, 1973-74 Source: Calculated.

APPENDIX 3

DATA TRANSFORMATIONS

Reciprocal Transformation:

VAR002
VAR005
VAR008
VAR009
VAR010
VAR011
VAR012
VAR013
VAR014
VAR016
VAR017
VAR018
VAR019
VAR020
VAR023
VAR025
VAR030
VAR032
VAR034
VAR035
VAR038
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VAR159
VAR160
VAR161
VAR162
VAR163
VAR164
VAR165
VAR166
VAR167
VAR168
VAR169
VAR170
VAR172
VAR175
VAR182
VAR202
VAR203
VAR206

APPENDIX 3 (Continued)

Square Root Transformation:

VAR006	VAR126	VAR143
VAR007	VAR127	VAR145
VAR031	VAR128	VAR153
VAR041	VAR129	VAR157
VAR042	VAR130	VAR158
VAR043	VAR131	VAR177
VAR044	VAR132	VAR178
VAR047	VAR133	VAR179
VAR048	VAR135	VAR180
VAR050	VAR136	VAR181
VAR051	VAR137	VAR189
VAR058	VAR138	VAR196
VAR059	VAR139	VAR199
VAR124	VAR141	VAR200
VAR125	VAR142	

Square Root Transformation for Small Numbers:

VAR004	VAR134	VAR184
VAR024	VAR144	VAR185
VAR037	VAR147	VAR186
VAR056	VAR154	VAR188
VAR075	VAR183	VAR190

Logarithmic Transformation for Small Numbers:

VAR001	VAR039	VAR171
VAR003	VAR064	VAR187
VAR026	VAR146	VAR197
VAR027		

APPENDIX 4

PART A

FACTOR SCORES FOR SOCIOECONOMIC FACTORS

District Number	Factor S1	Factor S2	Factor S3
1	1.077245	-0.717529	-1.280600
2	-1.378256	-0.125033	-2.276410
3	0.577083	-0.792519	0.776154
4	-0.558534	0.047781	-0.881026
5	1.068216	1.266255	0.255884
6	1.146859	0.082576	-0.492555
7	-1.106739	-0.942563	1.830800
8	1.080213	4.864136	-0.155024
9	0.777008	0.885798	0.699546
10	0.651538	1.467109	1.096678
11	1.417388	0.[illegible]8525	-0.436342
12	0.149183	0.[illegible]5923	-0.401746
13	0.777737	-0.387891	0.274054
14	-0.412102	-0.942900	0.040416
15	-1.205092	0.091637	-1.023879
16	0.765860	-0.965952	-0.409868
17	0.714211	-0.733207	-0.408376
18	-0.902410	0.327148	0.589726
19	-0.778468	-0.766949	1.998158
20	-0.991470	-0.476707	1.741799
21	-0.982682	0.858488	-1.479396
22	-1.459910	0.109903	1.523798
23	-1.365067	-0.008048	0.402420
24	-1.049562	-0.722059	-0.139880
25	-0.186691	-0.561118	0.686505
26	-0.260051	-0.634361	-0.502697
27	0.505677	-0.349039	0.627267
28	0.458625	-0.683327	-0.330731
29	0.865757	-0.708829	-0.029590
30	-1.041516	3.337372	2.421654
31	0.985706	-0.923323	-0.154245
32	-0.974178	0.551005	-0.229068
33	-1.158257	-0.701697	-0.268481
34	-2.053671	0.837971	-0.086657
35	0.529536	-0.350208	-0.053933

APPENDIX 4, PART A (Continued)

District Number	Factor S1	Factor S2	Factor S3
36	1.129252	0.303169	-0.182496
37	0.974868	-0.590171	-1.532071
38	-0.912411	-0.319551	-1.133672
39	-3.164022	0.093295	-1.014634
40	-1.013935	-0.271607	-0.570635
41	0.930927	0.187913	-0.370404
42	0.557013	-0.908566	-0.263771
43	0.966473	-0.082705	0.171113
44	0.530164	-0.131076	-0.226227
45	-0.188101	-0.703401	-0.274366
46	0.786227	1.383390	-0.144778
47	0.074719	-0.502089	1.723622
48	0.938242	-0.395749	-0.251574
49	0.476336	-0.370280	0.864303
50	1.073040	-0.661008	0.198689
51	0.966001	1.904499	0.377575
52	1.017267	0.423126	-0.752396
53	0.316834	-0.793725	0.224946
54	-0.085904	-0.741092	-0.059639
55	-0.107586	0.031609	1.175795
56	0.709753	-1.105454	0.088611
57	0.696554	0.829334	-0.497643
58	1.403954	0.119072	-0.537030
59	0.924611	-0.524488	0.326083
60	-0.062527	0.268994	0.401121
61	-0.585804	-0.492421	-0.531691
62	-1.050964	0.066652	-1.019474
63	-0.888473	1.140418	-2.833904
64	1.042474	-0.750320	0.317167
65	-1.505045	0.521495	-1.469835
66	-0.525906	-0.834276	1.955014
67	-1.103059	-0.002532	1.917265

APPENDIX 4

PART B

FACTOR SCORES FOR RESOURCE UTILIZATION FACTORS

District Number	Factor R1	Factor R2	Factor R3
1	2.348542	-0.134978	1.237098
2	-0.497876	-0.158298	0.763704
3	-0.794069	-0.640771	0.698949
4	2.246482	0.855482	-0.790953
5	-0.294718	-0.434401	0.293084
6	0.543496	-1.116392	-0.450337
7	1.739599	0.401288	-0.174224
8	1.383044	0.686812	-0.704325
9	0.477584	0.772803	-0.147416
10	-0.406092	0.201113	3.005612
11	2.657425	-0.273137	-0.534947
12	-0.237232	0.013788	0.586130
13	1.171051	-2.342336	-0.679255
14	-1.025045	0.918719	-1.216640
15	-1.335855	1.475473	-0.135549
16	0.515694	-0.608193	0.703155
17	-0.952012	-0.608523	0.241307
18	-0.377181	0.661229	-1.469877
19	0.317910	1.129991	0.123264
20	-0.059429	-0.483133	-0.076678
21	0.873956	2.703039	-0.464022
22	-0.817100	1.005222	-1.871163
23	-1.548772	-0.297862	-0.639805
24	-1.189578	-0.658289	-2.566012
25	-1.382820	0.810802	-0.269228
26	-0.381766	0.243063	1.528928
27	0.442424	0.323274	1.957776
28	-0.526299	0.400013	-0.834440
29	-0.559297	-0.715988	0.036058
30	-0.193360	0.083266	1.888359
31	-0.147710	-0.635172	-0.129936
32	-1.103304	-0.606112	-0.531568
33	0.030348	0.605462	0.525791
34	-1.790214	-0.491306	-1.252381
35	-0.713366	-0.945856	-0.731447

APPENDIX 4, PART B (Continued)

District Number	Factor R1	Factor R2	Factor R3
36	0.338123	-0.125938	0.036753
37	1.424509	0.081407	-0.719910
38	-0.395470	0.750445	0.648923
39	0.193968	0.653302	-0.982038
40	-0.147241	-0.120952	0.517100
41	0.378923	-1.428391	-1.066708
42	-0.121578	0.284681	0.212505
43	0.472016	1.523979	-1.703491
44	0.627331	0.173705	1.480471
45	-1.244563	0.138841	0.341620
46	-1.819545	0.484079	0.841376
47	-0.904881	0.280934	0.699665
48	0.006336	-1.322220	-0.285547
49	0.332647	0.211915	0.875109
50	0.989403	-1.576407	-1.392637
51	0.523688	1.274897	1.071815
52	0.312997	-1.545385	0.019588
53	-0.601865	-0.733461	0.247094
54	-0.794807	0.456374	0.041994
55	0.580698	0.006510	0.190283
56	0.297412	-1.643041	0.877833
57	-1.334541	0.050382	-0.258029
58	2.213765	-2.189440	-0.312271
59	-0.392578	-0.826760	1.230125
60	0.012308	0.374819	-0.195453
61	-1.056015	-0.610597	-0.948360
62	-0.525100	0.378713	0.647918
63	1.110253	1.492606	1.111648
64	-0.217370	-1.516628	-0.136138
65	0.270747	2.353193	0.307321
66	-0.239033	-1.194364	0.713061
67	1.294725	1.718031	-2.023526

APPENDIX 4

PART C

FACTOR SCORES FOR PROGRAMMATIC FACTORS

District Number	Factor P1	Factor P2
1	-0.250454	-0.592156
2	1.460857	-1.380345
3	-0.9[illegible]3067	0.331266
4	0.858797	2.006504
5	-2.030890	-0.805499
6	-0.689212	0.178756
7	0.317511	0.321290
8	-0.158229	-1.230454
9	0.286318	3.316706
10	-0.991606	0.565903
11	-0.546362	0.818028
12	-0.544283	0.447805
13	-1.204457	0.539851
14	1.431830	1.231025
15	1.478149	-0.327093
16	-0.750994	-0.417817
17	-0.842311	-0.250779
18	0.659429	-0.473785
19	0.736958	-1.742742
20	0.938437	-1.316133
21	1.265847	-0.096777
22	1.536838	-0.345150
23	-0.148850	-1.192845
24	0.762906	1.011456
25	0.124845	0.540863
26	0.257420	-0.598034
27	-0.130744	1.881817
28	0.266821	-0.707814
29	-0.639740	1.071470
30	0.087774	-0.752256
31	-1.313544	-0.141619
32	0.031734	-1.049589
33	1.915928	-0.588604
34	1.048909	-0.251040
35	-0.440140	-0.571240

APPENDIX 4, PART C (Continued)

District Number	Factor P1	Factor P2
36	-0.845193	1.109949
37	-0.443836	-0.009295
38	1.334727	-1.131505
39	1.850219	-0.079532
40	0.564121	-0.979866
41	-0.451455	0.705244
42	0.090493	-0.394898
43	-0.335527	0.454295
44	-0.550651	-1.180649
45	0.231171	-0.223222
46	-1.355856	-0.656267
47	0.889942	0.985623
48	-1.449502	0.052879
49	-1.677665	0.682092
50	-0.805735	-0.232583
51	-0.555419	1.616386
52	-1.558066	1.094144
53	-0.367976	-0.904695
54	0.527162	-0.254144
55	-0.556693	0.986466
56	-0.036360	-0.097197
57	-1.014669	-0.931640
58	-1.105087	0.285088
59	-0.875202	-0.024712
60	1.258579	-0.191919
61	0.244389	-0.165541
62	0.355607	-0.525836
63	0.963828	0.140675
64	-1.488287	-0.814139
65	2.446311	0.665634
66	-0.531823	-2.041437
67	1.425444	2.637940

APPENDIX 5

PART A

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 1
(R1 R3 P2)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	756.45
2	654	690.90
3	672	712.49
4	856	851.51
5	676	710.41
6	737	784.19
7	801	823.60
8	859	770.60
9	811	838.74
10	605	681.04
11	845	838.53
12	725	726.19
13	836	827.64
14	803	794.74
15	735	709.42
16	729	720.91
17	705	710.02
18	815	760.54
19	723	709.27
20	660	711.19
21	785	787.12
22	829	764.31
23	741	704.30
24	822	827.59
25	699	721.59
26	732	695.63
27	769	750.39
28	752	725.58
29	742	754.71
30	696	681.71
31	782	732.17
32	690	708.75
33	702	713.34

APPENDIX 5, PART A (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	717.48
35	744	722.01
36	752	794.27
37	791	820.70
38	736	703.21
39	764	780.92
40	664	708.59
41	808	821.17
42	742	718.52
43	940	832.76
44	722	705.16
45	715	707.35
46	639	641.24
47	686	720.63
48	751	749.55
49	758	741.96
50	839	821.13
51	708	779.71
52	733	793.29
53	702	707.79
54	692	713.26
55	817	792.84
56	738	719.47
57	734	705.46
58	819	835.67
59	658	708.57
60	710	737.71
61	752	728.90
62	763	708.19
63	715	741.95
64	718	715.80
65	724	760.96
66	709	671.46
67	945	945.47

APPENDIX 5

PART B

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 2
(R1 R3 P2 P1)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	751.05
2	654	719.30
3	672	707.53
4	856	834.50
5	676	688.60
6	787	756.92
7	801	808.86
8	859	762.94
9	811	822.23
10	605	674.98
11	845	819.77
12	725	723.72
13	836	776.64
14	803	813.56
15	735	742.74
16	729	716.67
17	705	705.94
18	815	779.20
19	723	725.74
20	660	735.23
21	765	808.05
22	829	803.01
23	741	706.30
24	822	817.12
25	699	733.26
26	732	706.30
27	769	750.16
28	752	740.65
29	742	739.90
30	696	700.85
31	782	715.06
32	690	713.55
33	702	766.70

APPENDIX 5, PART B (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	750.81
35	744	722.42
36	752	759.22
37	791	790.16
38	736	725.17
39	764	814.78
40	664	720.94
41	808	790.37
42	742	729.17
43	940	804.01
44	722	702.77
45	715	713.69
46	639	619.57
47	686	751.11
48	751	720.53
49	758	714.20
50	839	780.99
51	708	757.73
52	733	739.73
53	702	707.62
54	692	730.74
55	817	766.37
56	738	727.64
57	734	696.88
58	819	790.54
59	658	703.46
60	710	779.09
61	752	743.25
62	763	716.86
63	715	774.34
64	718	704.94
65	724	816.32
66	709	685.84
67	945	950.42

APPENDIX 5

PART C

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 3
(R1 R3 P2 S1 S2 S3)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	723.67
2	654	651.13
3	672	720.04
4	856	814.95
5	676	763.99
6	787	783.06
7	801	785.72
8	859	880.79
9	811	860.72
10	605	741.41
11	845	827.92
12	725	731.76
13	836	806.95
14	803	734.85
15	735	731.42
16	729	712.13
17	705	709.84
18	815	748.41
19	723	713.25
20	660	714.01
21	765	724.44
22	829	755.25
23	741	721.43
24	822	744.21
25	699	719.49
26	732	735.30
27	769	762.69
28	752	714.84
29	742	747.60
30	696	782.40
31	782	726.71
32	690	711.68
33	702	723.71

APPENDIX 5, PART C (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	710.55
35	744	723.17
36	752	799.99
37	791	758.17
38	736	741.85
39	764	720.12
40	664	728.62
41	808	804.37
42	742	711.15
43	940	815.30
44	722	709.83
45	715	719.91
46	639	711.51
47	686	749.61
48	751	748.47
49	758	761.57
50	839	801.87
51	708	821.07
52	733	787.15
53	702	710.19
54	692	710.10
55	817	796.24
56	738	714.48
57	734	714.54
58	819	816.47
59	658	715.26
60	710	748.14
61	752	709.86
62	763	732.05
63	715	713.14
64	718	725.98
65	724	709.79
66	709	712.72
67	945	889.72

APPENDIX 5

PART D

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 4
(R1 R3 P2 S2 R2 P1)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	741.30
2	654	729.99
3	672	703.06
4	856	836.13
5	676	715.52
6	787	741.72
7	801	774.60
8	859	828.99
9	811	824.34
10	605	720.95
11	845	790.62
12	725	744.94
13	836	728.97
14	803	785.11
15	735	768.27
16	729	711.18
17	705	702.23
18	815	777.88
19	723	743.04
20	660	731.84
21	765	826.67
22	829	791.92
23	741	715.98
24	822	771.51
25	699	746.24
26	732	714.87
27	769	751.48
28	752	743.45
29	742	728.40
30	696	757.44
31	782	709.88
32	690	727.68
33	702	758.23

APPENDIX 5, PART D (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	756.57
35	744	719.41
36	752	758.33
37	791	763.96
38	736	743.52
39	764	796.19
40	664	729.89
41	808	754.68
42	742	732.59
43	940	796.73
44	722	716.17
45	715	721.29
46	639	712.78
47	686	749.43
48	751	712.56
49	758	727.02
50	839	737.32
51	708	796.17
52	733	732.20
53	702	701.96
54	692	737.90
55	817	759.80
56	738	704.35
57	734	721.28
58	819	744.11
59	658	699.07
60	710	773.41
61	752	734.26
62	763	737.26
63	715	796.74
64	718	689.10
65	724	825.15
66	709	677.51
67	945	865.54

APPENDIX 5

PART E

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 5
(R1 P1 S1)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	784.98
2	654	732.26
3	672	730.95
4	856	820.52
5	676	730.38
6	787	779.89
7	801	775.57
8	859	834.05
9	811	822.79
10	605	727.29
11	845	823.33
12	725	725.40
13	836	758.83
14	803	722.63
15	735	730.97
16	729	743.84
17	705	731.03
18	815	725.20
19	723	730.61
20	660	721.40
21	765	793.26
22	829	727.19
23	741	758.69
24	822	725.74
25	699	726.70
26	732	721.93
27	769	764.57
28	752	727.71
29	742	721.49
30	696	731.07
31	782	723.00
32	690	693.48
33	702	762.24

APPENDIX 5, PART E (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	688.07
35	744	725.26
36	752	749.89
37	791	839.29
38	736	723.19
39	764	731.09
40	664	724.82
41	808	767.90
42	742	743.56
43	940	788.63
44	722	748.84
45	715	730.86
46	639	672.72
47	686	723.85
48	751	723.40
49	758	729.15
50	839	801.62
51	708	774.21
52	733	721.05
53	702	725.74
54	692	721.65
55	817	721.64
56	738	777.30
57	734	718.54
58	819	822.81
59	658	721.57
60	710	797.60
61	752	727.95
62	763	730.73
63	715	795.68
64	718	725.91
65	724	797.90
66	709	729.89
67	945	827.38

APPENDIX 5

PART F

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 6
(R1 R3 P2 S1)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	779.08
2	654	670.48
3	672	721.49
4	856	875.55
5	676	730.55
6	787	788.77
7	801	772.11
8	859	783.32
9	811	881.39
10	605	700.68
11	845	840.37
12	725	734.05
13	836	811.38
14	803	769.92
15	735	712.16
16	729	747.39
17	705	716.68
18	815	732.03
19	723	702.98
20	660	702.30
21	765	750.55
22	829	716.01
23	741	717.25
24	822	775.53
25	699	715.74
26	732	713.01
27	769	767.06
28	752	744.00
29	742	775.58
30	696	690.28
31	782	766.05
32	690	708.88
33	702	701.45

APPENDIX 5, PART F (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	714.68
35	744	741.17
36	752	792.90
37	791	809.18
38	736	719.04
39	764	698.99
40	664	710.38
41	808	808.15
42	742	735.98
43	940	830.72
44	722	698.91
45	715	698.31
46	639	707.37
47	686	722.87
48	751	774.68
49	758	760.92
50	839	813.55
51	708	784.57
52	733	790.25
53	702	699.71
54	692	704.34
55	817	774.47
56	738	743.08
57	734	701.66
58	819	863.65
59	658	716.91
60	710	740.37
61	752	712.67
62	763	712.56
63	715	716.06
64	718	746.94
65	724	712.17
66	709	715.62
67	945	881.77

APPENDIX 5

PART G

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 7
(WEIGHTED S1 R1 R3 P2)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	769.40
2	654	666.03
3	672	708.49
4	856	867.81
5	676	730.31
6	787	800.44
7	801	796.93
8	859	814.85
9	811	824.75
10	605	626.39
11	845	876.97
12	725	725.52
13	836	828.53
14	803	782.92
15	735	696.76
16	729	737.87
17	705	716.91
18	815	782.39
19	723	718.96
20	660	719.84
21	765	780.06
22	829	781.53
23	741	697.91
24	822	824.17
25	699	725.85
26	732	661.89
27	769	711.48
28	752	765.03
29	742	757.13
30	696	640.20
31	782	760.60
32	690	713.01
33	702	705.00

APPENDIX 5, PART G (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	721.34
35	744	758.09
36	752	786.69
37	791	832.36
38	736	683.10
39	764	755.39
40	664	696.63
41	808	826.37
42	742	738.00
43	940	852.90
44	722	694.69
45	715	693.38
46	639	661.92
47	686	708.10
48	751	773.70
49	758	737.02
50	839	846.41
51	708	753.30
52	733	785.08
53	702	712.66
54	692	719.80
55	817	770.00
56	738	727.98
57	734	717.34
58	819	847.26
59	658	696.98
60	710	754.16
61	752	749.11
62	763	686.11
63	715	724.76
64	718	750.22
65	724	734.23
66	709	677.06
67	945	894.52

APPENDIX 5

PART H

ACTUAL FUNDING PER PUPIL IN AVERAGE DAILY MEMBERSHIP
FOR 1972-73 AND AMOUNT PREDICTED BY MODEL 8
(WEIGHTED P1 R1 R3 P2)

District	Amount Per Pupil 1972-73	Predicted Amount
1	734	759.46
2	654	662.69
3	672	714.91
4	856	862.70
5	676	745.55
6	787	795.81
7	801	806.29
8	859	803.58
9	811	811.00
10	605	632.21
11	845	866.95
12	725	731.31
13	836	835.77
14	803	767.91
15	735	691.01
16	729	738.87
17	705	719.84
18	815	784.38
19	723	718.32
20	660	719.02
21	765	774.52
22	829	778.14
23	741	717.07
24	822	826.55
25	699	726.43
26	732	661.54
27	769	707.00
28	752	755.54
29	742	755.32
30	696	651.99
31	782	766.77
32	690	724.74
33	702	692.50

APPENDIX 5, PART H (Continued)

District	Amount Per Pupil 1972-73	Predicted Amount
34	729	732.24
35	744	757.67
36	752	784.48
37	791	826.42
38	736	675.71
39	764	768.89
40	664	701.36
41	808	821.09
42	742	729.77
43	940	845.54
44	722	695.81
45	715	692.48
46	639	671.18
47	686	694.63
48	751	782.38
49	758	754.68
50	839	844.34
51	708	749.05
52	733	794.30
53	702	713.88
54	692	713.45
55	817	779.18
56	738	719.62
57	734	722.92
58	819	845.27
59	658	697.74
60	710	737.22
61	752	752.99
62	763	694.24
63	715	722.30
64	718	758.14
65	724	718.60
66	709	691.13
67	945	888.24

APPENDIX 6

PART A

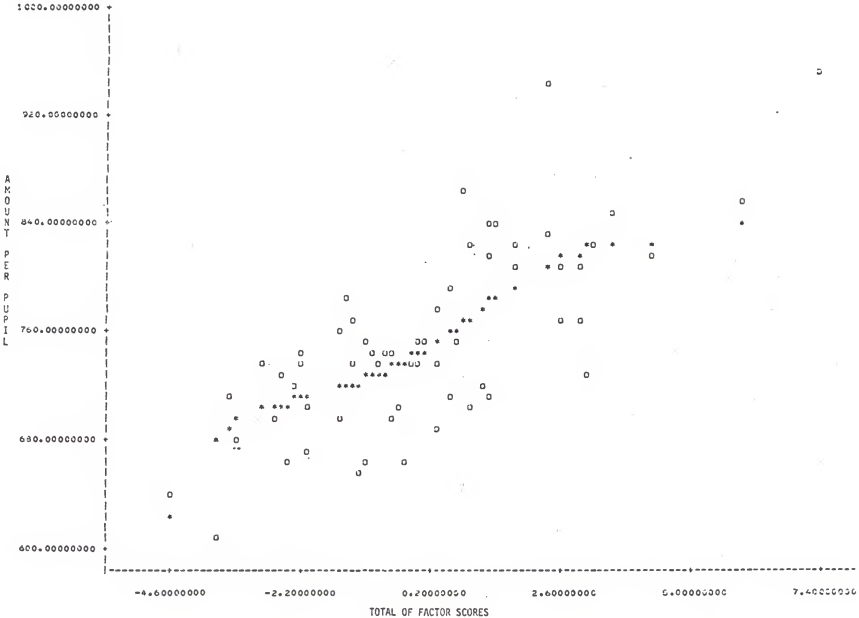
PLOT OF ALLOCATIONS PREDICTED BY MODEL 1 (R1 R3 P2)
AND FIFTH DEGREE CURVE OF BEST FIT

AMOUNT PER PUPIL
TOTAL OF FACTOR SCORES

APPENDIX 6

PART B

PLOT OF ALLOCATIONS PREDICTED BY MODEL 2 (R1 R3 P_ P1)
AND FIFTH DEGREE CURVE OF BEST FIT


1000.00000000
920.00000000
840.00000000
760.00000000
680.00000000
600.00000000
AMOUNT PER PUPIL
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-2.20000000
0.20000000
2.60000000
5.00000000
7.40000000
TOTAL OF FACTOR SCORES

APPENDIX 6

PART C

PLOT OF ALLOCATIONS PREDICTED BY MODEL 3 (R1 R3 P2 S1 S2 S3)
AND FIFTH DEGREE CURVE OF BEST FIT

AMOUNT PER PUPIL
1000.00000000
920.00000000
840.00000000
760.00000000
680.00000000
600.00000000
-5.00000000
-3.20000000
-1.40000000
0.40000000
2.20000000
4.00000000
TOTAL OF FACTOR SCORES

APPENDIX 6

PART D

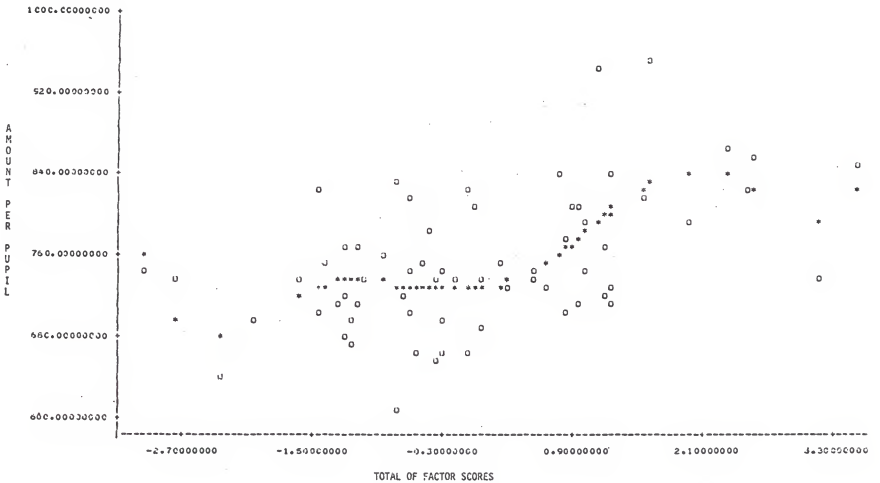
PLOT OF ALLOCATIONS PREDICTED BY MODEL 4 (R1 R3 P2 S2 R2 P1)
AND FIRST DEGREE CURVE OF BEST FIT

926.00000000
850.00000000
765.00000000
680.00000000
595.00000000
ANOMALY PER SUPPLY
-4.70000000
-1.90000000
0.90000000
3.70000000
6.50000000
9.30000000
TOTAL OF FACTOR SCORES

APPENDIX 6

PART E

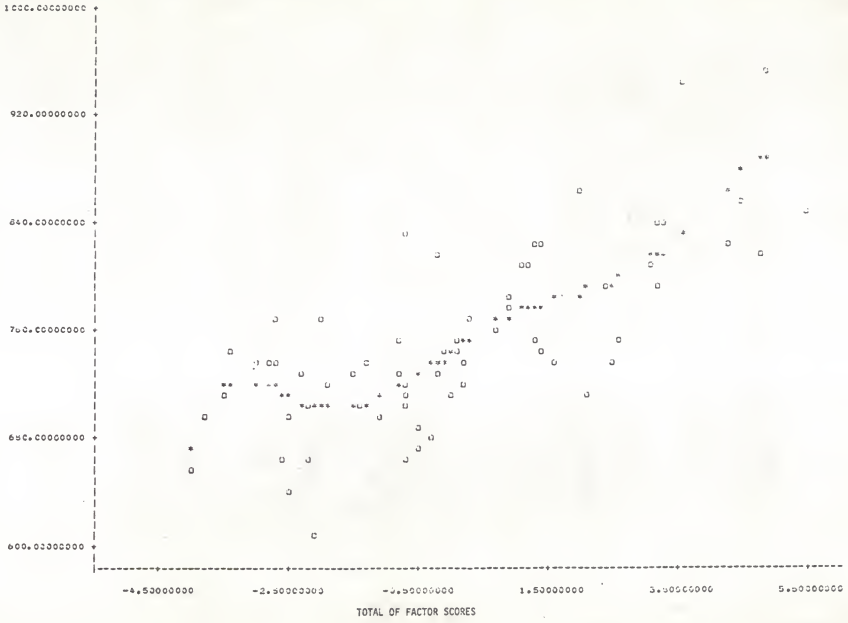
PLOT OF ALLOCATIONS PREDICTED BY MODEL 5 (R1 P1 S1)
AND SIXTH DEGREE CURVE OF BEST FIT


AMOUNT PER PUPIL
TOTAL OF FACTOR SCORES

APPENDIX 6

PART F

PLOT OF ALLOCATIONS PREDICTED BY MODEL 6 (R1 R3 P2 S1)
AND SIXTH DEGREE CURVE OF BEST FIT


1000.00000000
920.00000000
840.00000000
760.00000000
680.00000000
600.00000000
AMOUNT PER PUPIL
-4.50000000
-2.50000000
-0.50000000
1.50000000
3.50000000
5.50000000
TOTAL OF FACTOR SCORES

APPENDIX 7

DIFFERENCES BETWEEN 1972-73 ACTUAL EXPENDITURES AND ALLOCATIONS PREDICTED BY EIGHT FUNDING MODELS FOR FLORIDA SCHOOL DISTRICTS

District Number	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
1	$ 22.459	$ 17.051	$-10.324	$ 7.302	$ 50.981	$ 45.087	$ 35.406	$ 25.467
2	36.904	65.307	-2.865	75.999	68.260	16.486	12.032	8.691
3	40.493	35.536	48.046	31.065	58.952	50.496	36.496	42.913
4	-4.487	-21.495	-41.050	-19.861	-35.473	19.555	11.815	6.704
5	34.417	12.604	87.995	39.523	54.389	54.557	54.315	69.557
6	-2.803	-30.080	-3.939	-45.272	-7.104	1.775	13.446	8.814
7	22.601	7.860	-15.275	-26.394	-25.424	-28.887	-4.065	5.298
8	-88.391	-96.057	21.797	-30.001	-24.941	-75.674	-44.142	-55.417
9	27.742	11.230	50.720	13.340	11.798	70.391	13.753	0.009
10	76.043	69.988	136.412	115.954	122.297	95.681	21.394	27.211
11	-6.468	-25.228	-17.080	-54.377	-21.665	-4.628	31.978	21.954
12	1.194	-1.272	6.768	19.941	0.403	9.059	0.520	6.318
13	-8.353	-59.355	-29.048	-107.029	-77.163	-24.615	-7.461	-0.224
14	-8.257	10.565	-68.149	-17.884	-80.364	-33.078	-20.078	-35.087
15	-25.580	7.742	-3.579	33.273	-4.028	-22.840	-38.237	-43.985
16	-8.090	-12.325	-16.870	-17.816	14.849	18.393	8.869	9.870
17	5.028	0.943	4.847	-2.770	26.033	11.686	11.916	14.848
18	-54.453	-35.794	-66.583	-37.117	-89.798	-82.967	-32.607	-30.611
19	-13.727	2.748	-9.744	20.042	7.613	-20.017	-4.034	-4.680
20	51.195	75.238	54.012	71.848	61.403	42.303	59.845	59.025
21	22.127	43.058	-40.556	61.675	28.264	-14.448	15.062	9.523
22	-64.689	-25.981	-73.742	-37.075	-101.801	-112.989	-47.467	-50.857
23	-36.695	-34.693	-19.570	-25.018	17.691	-23.744	-43.083	-23.924
24	5.592	-4.871	-77.790	-50.486	-96.251	-46.468	2.175	4.553
25	22.591	34.262	20.491	47.249	27.708	16.744	26.855	27.431

APPENDIX 7 (Continued)

District Number	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
26	$-36.362	$-25.700	$ 3.302	$-17.122	$-10.064	$-18.989	$-70.105	$-70.479
27	-18.608	-18.838	-6.302	-17.513	-4.424	-1.934	-57.516	-61.996
28	-26.413	-11.341	-37.160	-8.548	-24.284	-7.999	13.030	3.541
29	12.718	-2.096	5.607	-13.593	-20.501	33.585	15.134	13.320
30	-14.285	4.850	86.405	61.448	35.076	-5.714	-55.791	-44.007
31	-50.821	-66.938	-55.290	-72.112	-58.998	-15.950	-21.399	-15.226
32	18.755	23.550	21.686	37.685	3.487	18.889	23.011	34.741
33	11.341	64.701	21.714	56.234	60.240	-0.543	3.002	-9.496
34	-11.516	21.814	-18.441	27.579	-40.924	-14.315	-7.656	3.245
35	-21.989	-21.577	-20.826	-24.588	-18.736	-2.825	14.094	13.672
36	42.275	7.223	47.992	6.333	-2.102	40.907	34.699	32.483
37	29.702	-0.831	-32.826	-27.031	48.290	18.188	41.363	35.426
38	-32.783	-10.821	5.851	7.527	-12.808	-16.951	-52.897	-60.285
39	16.927	50.788	-43.879	32.192	-32.903	-65.001	-8.605	4.893
40	44.593	56.944	64.621	65.893	60.824	46.386	32.636	37.367
41	13.173	-17.625	-3.623	-53.317	-40.094	0.156	18.376	13.096
42	-23.474	-12.824	-30.842	-9.408	1.560	-6.015	-3.993	-12.229
43	-107.239	-135.990	-124.696	-143.266	-151.368	-109.280	-87.097	-94.454
44	-16.833	-19.221	-12.169	-5.828	26.843	-23.088	-27.308	-26.182
45	-7.648	-1.307	4.913	6.293	15.862	-16.685	-21.615	-22.519
46	2.240	-19.422	72.519	73.787	33.726	68.371	22.926	32.189
47	34.632	65.110	63.611	63.433	37.853	36.879	22.101	8.636
48	-1.447	-30.464	-2.521	-38.433	-27.591	23.686	22.706	31.387
49	-16.035	-43.794	3.575	-30.979	-28.843	2.924	-20.979	-3.311
50	-17.869	-58.004	-37.124	-101.677	-37.373	-25.447	7.410	5.342
51	71.711	50.738	113.074	88.178	66.217	76.579	45.304	41.049
52	60.289	6.735	54.159	-0.798	-11.947	57.257	52.083	61.304
53	5.790	5.619	8.196	-0.035	23.747	-2.280	10.668	11.889
54	21.261	38.740	18.100	45.903	29.657	12.343	27.800	21.452
55	-24.155	-50.629	-20.751	-57.192	-95.356	-42.529	-46.998	-37.815

APPENDIX 7 (Continued)

District Number	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
56	$-18.522	$-10.355	$-23.518	$-33.644	$ 39.309	$ 5.089	$-10.020	$-18.380
57	-28.536	-37.119	-19.460	-12.711	-15.456	-32.335	-16.658	-11.078
58	16.679	-28.457	-2.527	-74.883	3.814	44.656	28.259	26.269
59	50.569	45.465	57.265	41.076	63.574	58.914	38.982	39.748
60	27.714	69.098	38.147	63.411	87.600	30.376	44.160	27.220
61	-23.092	-8.741	-42.133	-17.733	-24.043	-39.325	-2.883	0.998
62	-54.800	-46.137	-30.945	-25.731	-32.268	-50.432	-76.889	-68.759
63	26.952	59.341	-1.859	81.741	80.682	1.068	9.768	7.304
64	-2.194	-13.057	7.987	-28.892	7.917	28.949	32.224	40.148
65	36.967	92.322	-14.210	101.154	73.907	-11.830	10.231	-5.399
66	-37.532	-23.155	3.726	-31.486	20.891	6.629	-31.932	-17.870
67	0.474	5.425	-55.273	-79.457	-117.620	-63.223	-50.475	-56.757

APPENDIX 8

FLORIDA SCHOOL DISTRICTS GROUPED BY PROPERTY WEALTH PER PUPIL IN AVERAGE DAILY MEMBERSHIP, 1972-73

Assessed Valuation Per Pupil	District
≤ $10,000	Gadsden
	Holmes
$10,001 to $20,000	Baker
	Bradford
	Brevard
	Calhoun
	Clay
	Columbia
	Dixie
	Escambia
	Gilchrist
	Gulf
	Hamilton
	Jackson
	Jefferson
	Okaloosa
	Liberty
	Madison
	Putnam
	Seminole
	Sumter
	Suwannee
	Union
	Wakulla
	Walton
	Washington
$20,001 to $40,000	Alachua
	Bay
	Citrus
	DeSoto
	Duval
	Franklin
	Hardee

APPENDIX 8 (Continued)

Assessed Valuation Per Pupil	District
	Hendry
	Hernando
	Highlands
	Hillsborough
	Indian River
	Lafayette
	Lake
	Lee
	Leon
	Levy
	Manatee
	Marion
	Nassau
	Okeechobee
	Orange
	Pasco
	Pinellas
	Polk
	St. Johns
	St. Lucie
	Santa Rosa
	Taylor
	Volusia
$40,001 +	Broward
	Charlotte
	Collier
	Dade
	Flagler
	Glades
	Martin
	Monroe
	Osceola
	Palm Beach
	Sarasota

Source: *Report of the Commissioner of Education of Pupil, Personnel and Financial Data for the Fiscal Year Beginning July 1, 1972, and Ending July 30, 1973* (Tallahassee, Florida: Department of Education, 1974), pp. 10-11, 84-85.

APPENDIX 9

FLORIDA SCHOOL DISTRICTS GROUPED BY MAGNITUDE OF INCOME PER CAPITA, 1970

Amount of Income	District
≤ $2,000	Baker
	Calhoun
	DeSoto
	Dixie
	Franklin
	Gadsden
	Gilchrist
	Glades
	Hamilton
	Hardee
	Holmes
	Jackson
	Jefferson
	Lafayette
	Levy
	Liberty
	Madison
	Sumter
	Union
	Wakulla
	Washington
$2,001 to $3,000	Alachua
	Bay
	Bradford
	Charlotte
	Citrus
	Clay
	Columbia
	Duval
	Escambia
	Flagler
	Gulf
	Hendry
	Hernando
	Highlands

APPENDIX 9 (Continued)

Amount of Income	District
	Hillsborough
	Indian River
	Lake
	Leon
	Manatee
	Marion
	Martin
	Monroe
	Nassau
	Okaloosa
	Okeechobee
	Osceola
	Pasco
	Polk
	Putnam
	St. Johns
	St. Lucie
	Santa Rosa
	Seminole
	Suwannee
	Taylor
	Volusia
	Walton
$3,001 to $4,000	Brevard
	Broward
	Dade
	Lee
	Orange
	Palm Beach
	Pinellas
	Sarasota
$4,001 +	Collier

Source: *Population Characteristics of Florida School Districts*, Research Report Number 106 (Tallahassee, Florida: Department of Education, September 1974), p. 51.

APPENDIX 10

FLORIDA SCHOOL DISTRICTS GROUPED BY NUMBER OF PUPILS IN AVERAGE DAILY MEMBERSHIP, 1972-73

Number	District
≤ 2,000	Dixie
	Flagler
	Franklin
	Gilchrist
	Glades
	Lafayette
	Liberty
	Union
	Wakulla
2,001 to 5,000	Baker
	Bradford
	Calhoun
	DeSoto
	Gulf
	Hamilton
	Hardee
	Hendry
	Holmes
	Jefferson
	Levy
	Madison
	Okeechobee
	Sumter
	Suwannee
	Taylor
	Walton
	Washington
5,001 to 12,000	Charlotte
	Citrus
	Clay
	Collier
	Columbia

APPENDIX 10 (Continued)

Number	District
	Gadsden
	Hernando
	Highlands
	Indian River
	Jackson
	Martin
	Monroe
	Nassau
	Osceola
	Putnam
	St. Johns
	St. Lucie
	Santa Rosa
12,001 to 25,000	Alachua
	Bay
	Lake
	Lee
	Leon
	Manatee
	Marion
	Pasco
	Sarasota
25,001 to 100,000	Brevard
	Escambia
	Okaloosa
	Orange
	Palm Beach
	Pinellas
	Polk
	Seminole
	Volusia
100,001 +	Broward
	Dade
	Duval
	Hillsborough

Source: *Report of the Commissioner of Education of Pupil, Personnel and Financial Data for the Fiscal Year Beginning July 1, 1972, and Ending July 30, 1973* (Tallahassee, Florida: Department of Education, 1974), pp. 10-11.

APPENDIX 11

FLORIDA SCHOOL DISTRICTS CLASSIFIED BY POPULATION DENSITY

Description	District
Urban	Brevard
	Broward
	Dade
	Duval
	Escambia
	Hillsborough
	Orange
	Palm Beach
	Pinellas
Rural	Baker
	Bradford
	Calhoun
	Citrus
	Flagler
	Gadsden
	Gilchrist
	Glades
	Hamilton
	Hardee
	Hendry
	Hernando
	Holmes
	Jackson
	Jefferson
	Lafayette
	Levy
	Liberty
	Madison
	Marion
	Martin
	Nassau
	Okeechobee
	Pasco
	Putnam
	Santa Rosa
	Sumter

APPENDIX 11 (Continued)

Description	District
	Union
	Wakulla
	Walton
	Washington
Urbanized Rural	Alachua
	Bay
	Charlotte
	Clay
	Columbia
	Collier
	DeSoto
	Franklin
	Gulf
	Highlands
	Indian River
	Lake
	Lee
	Leon
	Manatee
	Monroe
	Okaloosa
	Polk
	St. Lucie
	Sarasota
	Seminole
	Suwannee
	Taylor
	Volusia

Source: *Improving Education in Florida: A Report by the Governor's Citizens' Committee on Education* (Tallahassee, Florida, 1973), pp. 243-45.

APPENDIX 12

FLORIDA SCHOOL DISTRICTS CLASSIFIED BY ACHIEVEMENT QUARTILE, TWELFTH GRADE APTITUDE RAW SCORES, 1973

First (Highest) Quartile:

Charlotte
Clay
Brevard
Dade
Hillsborough
Indian River
Lee
Martin
Monroe
Okaloosa
Orange
Osceola
Pinellas
Santa Rosa
Sarasota
Seminole
Washington

Second Quartile:

Alachua
Bay
Broward
Citrus
Collier
Duval
Gilchrist
Hernando
Highlands
Lake
Leon
Manatee
Palm Beach
Suwannee
Volusia
Walton

Third Quartile:

Calhoun
Columbia
Escambia
Flagler
Hardee
Hendry
Holmes
Jackson
Lafayette
Marion
Nassau
Pasco
Polk
St. Johns
St. Lucie
Sumter

Fourth Quartile:

Baker
Bradford
DeSoto
Dixie
Franklin
Gadsden
Glades
Gulf
Hamilton
Jefferson
Levy
Liberty
Madison
Okeechobee
Putnam
Union
Wakulla

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BIOGRAPHICAL SKETCH

Carol E. Hanes was born in Hinton, West Virginia, on November 19, 1946. Becoming a resident of Virginia in 1951, she attended public schools in Virginia and received the B.A. degree in German and English from Virginia Polytechnic Institute in 1969. She earned the M.A. in English from the same institution in 1971.

In 1971 Hanes joined the Virginia Department of Education. Two years later she was granted academic leave to pursue the doctorate in educational administration at the University of Florida as a National Educational Finance Project Fellow.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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